

**PHASE III REMEDIAL ACTION PLAN/  
CLASS C-2 RESPONSE ACTION OUTCOME**

413-421 Second Street  
Everett, Massachusetts  
RTN 3-24465

February 2009

Prepared for:

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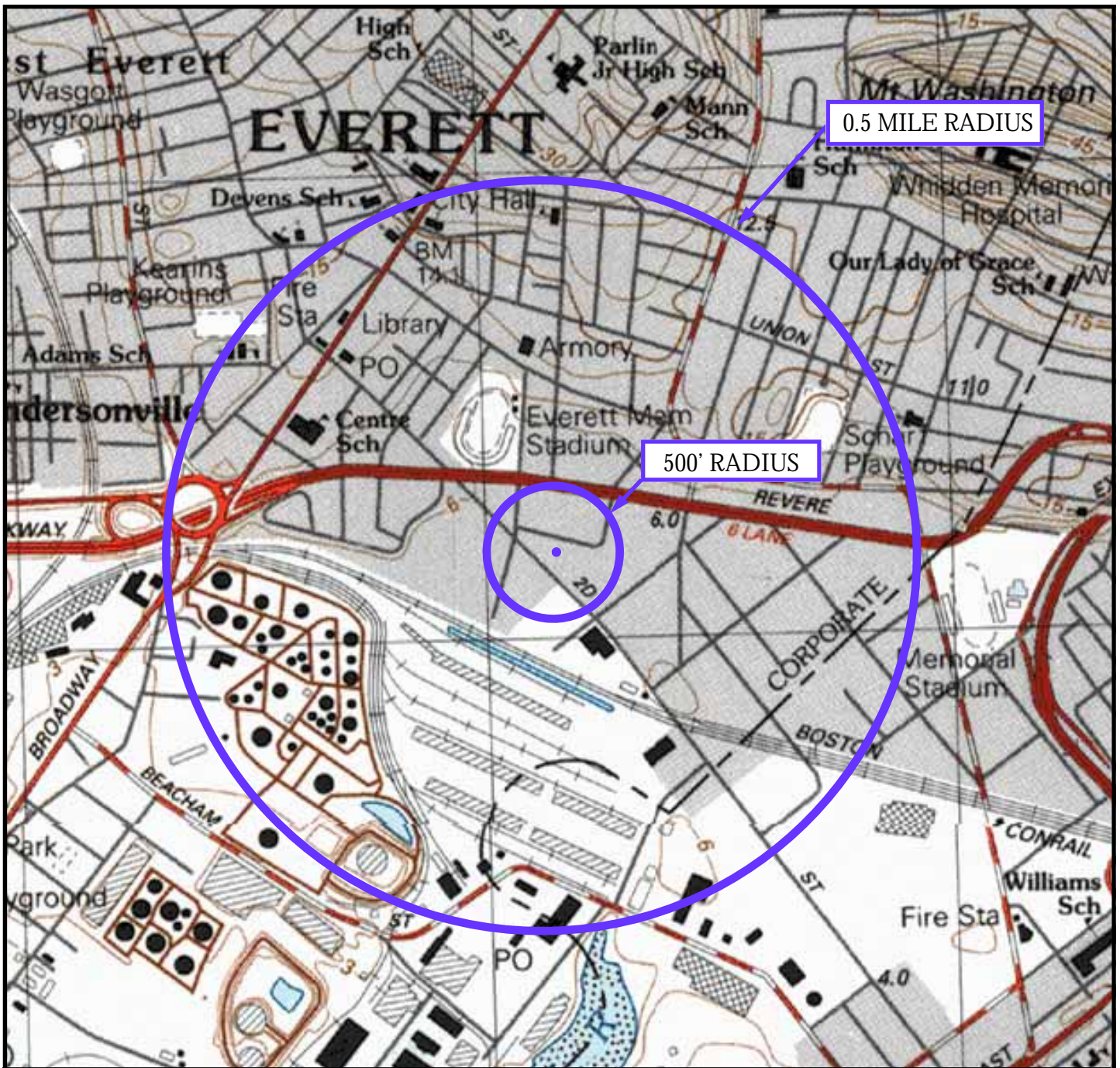
## **1.0 Introduction**

This Phase III Remedial Action Plan and Class C-2 Response Action Outcome has been prepared by Nangle Consulting Associates, Inc. (NCA) on behalf of M. Kaplan and Co.(Kaplan), pursuant to the provisions of Sections 40.0850 and 40.1050, respectively, of the Massachusetts Contingency Plan (MCP). The release condition that is the subject of this report may be generally described as residual levels of metals, petroleum hydrocarbons and polynuclear aromatic hydrocarbons (PAHs) in soil that are associated with historic land use practices and filling activities conducted upon the parcel of land identified as 413-421 Second Street in the City of Everett, Massachusetts.

The project site, identified as Release Tracking Number (RTN) 3-24465, is currently vacant and covered with recycled asphalt and enclosed within a secured chain link fence around the perimeter of the parcel. To facilitate the review of data and information presented within this report, a USGS Topographic Locus Map for the study region depicting the site, defined by UTM coordinates N 4696165 m and E 331205 m, Boston-North Quadrangle, is presented as Figure 1. In addition, general land use characteristics and approximate boundaries of the project site may be referenced from a Sketch Plan of Site which has been prepared as Figure 2.

Comprehensive response actions have been completed at the site by the firm of Underground Engineering, LLC (Underground) over the period of June 2004 through August of 2008 to address release conditions that were initially reported to the Massachusetts Department of Environmental Protection (MDEP) on December 4, 2004. A Phase I Initial Site Investigation Report was submitted to MDEP on 8 December 2005 and a Phase II Comprehensive Site Assessment (CSA) Report was filed with MDEP on 7 December 2007. Underground's Phase II CSA included a Method 2 Risk Characterization and Substantial Hazard Evaluation prepared by the firm of Woodward & Curran (W&C) which concluded that no current risk to human health existed at the site, however, a condition of no significant risk for unrestricted future uses/activities had not been achieved. W&C also concluded that no substantial hazards to human health or the environment existed at that time.

As described in Underground's Phase I Study, historic land use activities have included lead smelting operations from 1926-27 through 1982. Following this, the property supported a mixture of scrap metal, freight storage and office uses. In February of 2007, a Release Abatement Measures (RAM) plan was prepared by Underground and filed with MDEP. According to Underground, in the Spring of 2007, the onsite structures were razed by NTD Corporation to enable the future assessment of site conditions. In general, the primary components of the RAM Plan included the crushing and on-site reuse of the former building foundations and floor slabs, the placement of approximately 12-inches of reprocessed asphalt across the site to limit the potential for the direct contact with site soils and the installation of additional monitoring wells to replace wells that were damaged during building demolition activities. These activities were completed under the supervision of Underground and in August of 2008 a RAM completion report documenting these activities was filed.



U.S.G.S TOPOGRAPHIC LOCUS  
413 - 421 SECOND STREET  
EVERETT, MASSACHUSETTS

U.S.G.S QUADRANGLE  
**BOSTON-NORTH**

CONTOUR INTERVAL- 3 METERS



KILOMETERS



MILES

LATITUDE/LONGITUDE

N 42° 24' - 05" W 71° 03' - 04"

UTM

N 4696.165 KM E 331.205 KM

**NCA**

Nangle Consulting Associates, Inc.  
960 Turnpike Street Canton, Massachusetts

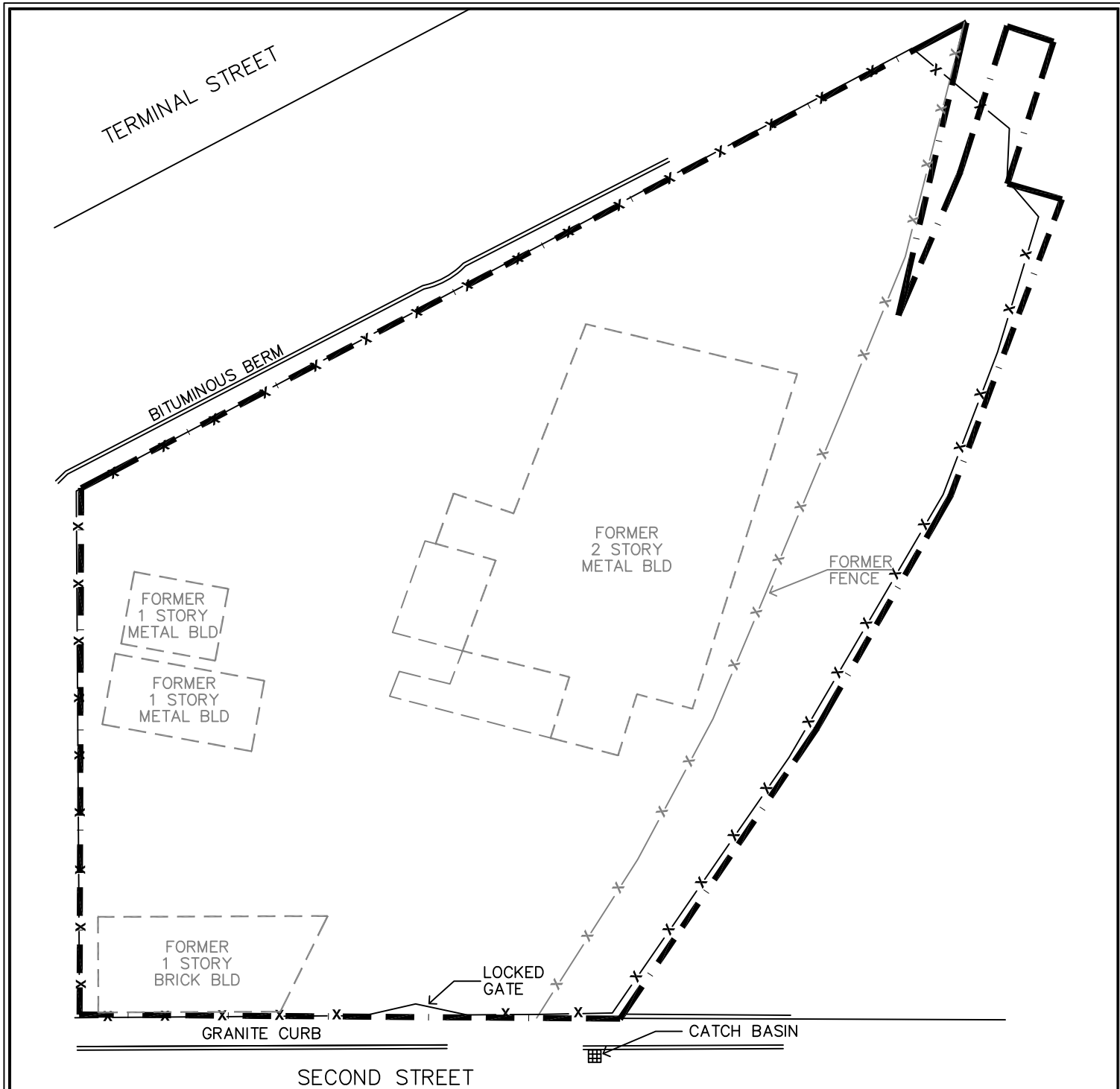
Date: FEB 2009

Job No: 704.01



Figure

1



#### LEGEND

- PROPERTY LINE
- FORMER BUILDING
- X — FENCE LINE

REFERENCE: Release Abatement Measure Completion Report, 413-421 Second St-Everett Ma: prepared by Underground Engineering 8-8-08.

#### SKETCH PLAN OF SITE 413-421 SECOND STREET EVERETT, MASSACHUSETTS

0 20 40  
Approximate Scale In Feet

Date: FEB 2009

Job No: 704.01



Figure  
2



In December of 2008, NCA was engaged by the current site owner to undertake a review of the assessment/response actions completed by prior site investigators and provide recommendations for alternatives to achieve site closure pursuant to the requirements established within the Massachusetts Contingency Plan (MCP). At this time, NCA was advised that the recommended remedial strategy that had been proposed by Underground included the construction of an Engineered Barrier (EB) across the site. However, NCA's review of available documentation, including online records with MDEP, revealed that no formal feasible alternative analyses or remedial action plan had been prepared and submitted along with the Phase II report. Absent this document, the property owner was unable to meet the December 8, 2008 deadline for the submittal of a Phase IV Remedy Implementation Plan and pursuant to the provisions of Section 40.0560(5) of the MCP, a notice of project delay in meeting the Phase IV requirement was submitted by the site owner.

In response to the above compliance requirement, a Phase III evaluation of feasible alternatives corresponding Remedial Action Plan has been prepared in Section 7.0 of this submittal. As discussed in further detail therein, the alternative selected for implementation at this time is a temporary (Class C-2) solution that generally involves the restriction of access to the parcel through locked perimeter fencing until such time that a permanent solution may be implemented as a part of site redevelopment. As the permanent site remedy components are anticipated to include the use of an Engineered Barrier, the integration of these risk reduction measures with proposed site improvements will enhance the efficiency and cost effectiveness of remedy implementation.

In accordance with the public notification requirements established within the Massachusetts Contingency Plan (MCP), a Notice to the Chief Municipal Officer and Board of Health has been submitted indicating that a Class C-2 RAO has been prepared and its availability for public review. A copy of the public notice is included within Appendix A of this report.

## **2.0    *Site Description***

The project site that is the subject of this report is located at 413-421 Second Street in the City of Everett, Massachusetts. The following excerpts from Underground's December 2007 Phase II CSA provides a description of the property at that time.

The approximate location of the property on the United States Geologic Survey (USGS) is Longitude 71.0503, Latitude 42.40124 with Universal Transverse Mercator (UTM) Coordinates of approximately E236980 and N905730.

The property covers approximately one acre of industrial zoned land on the north side of Second Street between Garden and Spring Streets in Everett, Massachusetts. Four buildings that formerly occupied the property included a 7,000 square-foot, metal-clad warehouse, a 1,526 square-foot brick office and two small, garage-size, sheds. All four of these structures have been demolished as described in Section 5.30. The property is currently vacant and there are no on-site workers. The property is surrounded by a chain link fence that is kept locked.

The ground surface has been covered with a layer of recycled asphalt as described in Section 5.30.5. Vegetation has been removed. The neighboring properties have been leveled and paved such that the subject property is lower in elevation than its neighbors. Figure 2 presents a plan of the site as it was prior to demolition.

An inspection of the project site was performed by NCA in February of 2009, and at that time, conditions appeared to be generally consistent with those described above, with the exception that the 12-inch layer of recycled asphalt did not appear to cover the entire limits of property. In particular, indications of vegetation and organic soils were noted along the northwestern property line, with recycled asphalt also appearing to taper off as it met existing grades along Second Street frontage.

The project site is located within an industrial/commercial section of Everett. The nearest residence to the project site is situated approximately 0.13 miles to the northwest, on the northern side of the Revere Beach Parkway (Route 16). A review of the MassGIS DEP Priority Resource Map (Figure 3) for the study area indicates that the project site is not located within an existing or potential drinking water resource area. The study area is currently serviced by a municipal water supply. Further, no areas of critical environmental concern, certified vernal pools or estimated habitats for rare wetlands wildlife have been identified within 500 feet of the project site. The closest surface water feature to the site shown on the U.S.G.S Map (Figure 1) consists of a drainage channel approximately 700 feet to the south of the site located along the southern side of a railroad right of way. The nearest named surface water feature is the Island End River, situated approximately 0.5 mile to the southeast of the project site.



### **3.0     *Site/Release History***

Undergrounds review of site history information within their Phase II CSA included interviews with site operators, a review of historic maps and a review of available record information maintained by the City of Everett. Early maps for the study area from the late 1800's reviewed by Underground reportedly depicted the site and surrounding area as undeveloped marshland. Following this, the site was reportedly occupied by a lead smelting facility known as ACME Type Metal Company from the mid 1920's through the early 1980's. In 1982 the site was acquired by Kaplan and subsequently used to support a scrap metal collection, freight storage and office land use activities. In March of 2005, Kaplan sold the property to 413 Second Street LLC, who currently owns the property.

According to Everett City Clerk records reviewed by Underground, licenses for the underground storage of 3,000 gallons of fuel oil and 500 gallons of gasoline were issued by the City in October of 1925. While the former location of these vessels is unknown, records indicate that these two tanks were removed and replaced with a 5,000 gallon underground fuel oil tank in 1960. This tank was reportedly removed from an area to the northeast of the building formerly located within central portions of the site (Figure 2) sometime in the late 1980's to early 1990's. No record or documentation pertaining to the removal of this tank had been identified, however Underground reported that according to the owner of the site at that time it was removed "without incident". Underground's Phase II report also indicated that a 275 gallon underground heating oil storage tank was located to the rear of the former brick building that fronted along Second Street, however the final disposition of this tank is unknown.

In the spring of 2007 the former on-site buildings were demolished by the firm of NTD Corporation and the floor slabs and foundations were subsequently crushed on-site and re-used as fill during RAM Plan implementation. Following this demolition, a 12-inch layer of reprocessed asphalt was reportedly placed across disturbed areas of the site to prevent access and/or contact with underlying soils. The project site is currently vacant and is enclosed within a gated and locked chain link fence, effectively restricting access to the site. Based upon the nature of land use activities at the site, the potential sources for the release of hazardous materials and or oils upon the site include historic filling practices conducted to facilitate initial site development, the former smelting and scrap metal operations together with past petroleum storage practices that have been maintained at the site.

Based upon the results obtained by Underground during their preliminary assessment of the site, a 120 reportable condition was identified involving the exceedance of the applicable Reportable Concentration values for lead, zinc and nickel in soil. A Release Notification Form was submitted by Kaplan on 4 December 2004 and the site was subsequently assigned release tracking number 3- 24465 by MDEP.

#### **4.0     *Assessment History and Nature and Extent of Contamination***

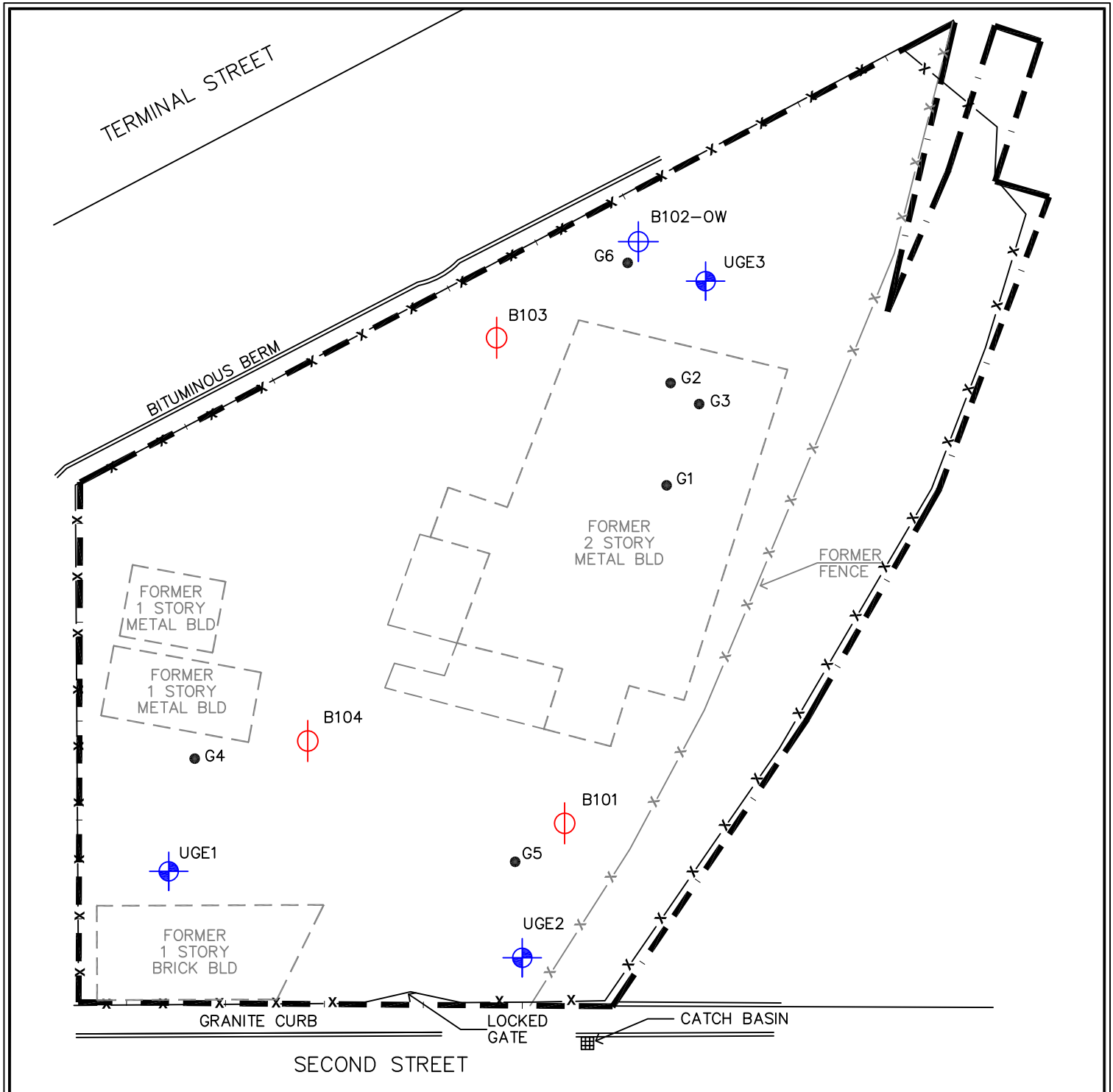
Comprehensive assessment activities have been completed at the site by Underground over the period of June 2004 through August of 2008. At the time of Underground's initial involvement, three (3) existing monitoring wells, designated as B1-OW through B3-OW were identified as existing upon the property. These sampling locations had been installed by The Geotechnical Group, Inc. (TGG) in June of 1987. Underground completed Phase I and Phase II Environmental Studies, followed by the development and oversight of a Release Abatement Measure (RAM) that was completed in August of 2008. RAM activities generally involved the "in place" crushing of concrete slabs and the placement of a recycled asphalt cap across the majority of the site. A chronologic summary of the iterative assessment and response actions completed under the direction of Underground is presented within Sections 4.1 and 4.2 below, while a compilation of soil and groundwater data obtained is presented within Section 4.3.

##### **4.1 Overview of Assessment Activities by Underground Engineering, LLC.**

Over the period of June through July of 2004, Underground placed four (4) test borings across the site and collected six (6) surface samples, which included three (3) from within the then existing on-site building and three (3) from exterior portions of the site. One of the test borings (B-102) was completed as a 2" diameter groundwater observation well to supplement those installed previously in June of 1987 by TGG. A copy of the boring logs for both the B-1 series and B-100 series borings/wells are included within Appendix B, and a sketch plan depicting the approximate locations of the Underground June/July 2004 sample locations is presented as Figure 4.

As discussed in further detail within Section 4.3, the initial sampling of the older B-1 series wells revealed elevated levels of lead, cadmium and zinc in groundwater. Based upon the results obtained, Underground concluded that the B-1 Series wells were likely compromised and did not provide a representative characterization of groundwater quality. In April of 2005 eight (8) additional test borings, designated as B-201 through B-208, were installed under the direction of Underground, four (4) of which were completed as standard 2" diameter groundwater observation wells at the approximate locations depicted on Figure 5. Copies of the boring logs prepared by Underground for the B-200 series test borings are also included within Appendix B.

The analysis of soil/fill samples collected from the B-200 series test boring locations revealed exceedances of the Reportable Concentration (RC) standards for several PAHs, lead, antimony and zinc. In an effort to further delineate the distribution of these site contaminants, Underground placed sixteen (16) test pits across the site over the period of June through November 2005 within the approximate locations presented on Figure 6. Copies of the test pit logs and photographs prepared by Underground may also be referenced within Appendix B.



#### LEGEND

- |  |                                       |  |                    |
|--|---------------------------------------|--|--------------------|
|  | MONITORING WELL<br>PLACED BY TGG-1987 |  | PROPERTY<br>LINE   |
|  | SOIL BORING<br>PLACED BY UE           |  | FORMER<br>BUILDING |
|  | MONITORING WELL<br>INSTALLED BY UE    |  | FENCE LINE         |
|  | SOIL SAMPLE<br>TAKEN BY UE            |  |                    |

REFERENCE: Release  
Abatement Measure  
Completion Report,  
413-421 Second  
St-Everett Ma:  
prepared by  
Underground  
Engineering 8-8-08.

SKETCH PLAN OF SITE  
413-421 SECOND STREET  
EVERETT, MASSACHUSETTS

APPROXIMATE SAMPLE  
LOCATIONS: 1987-2004

0 20 40  
Approximate Scale In Feet

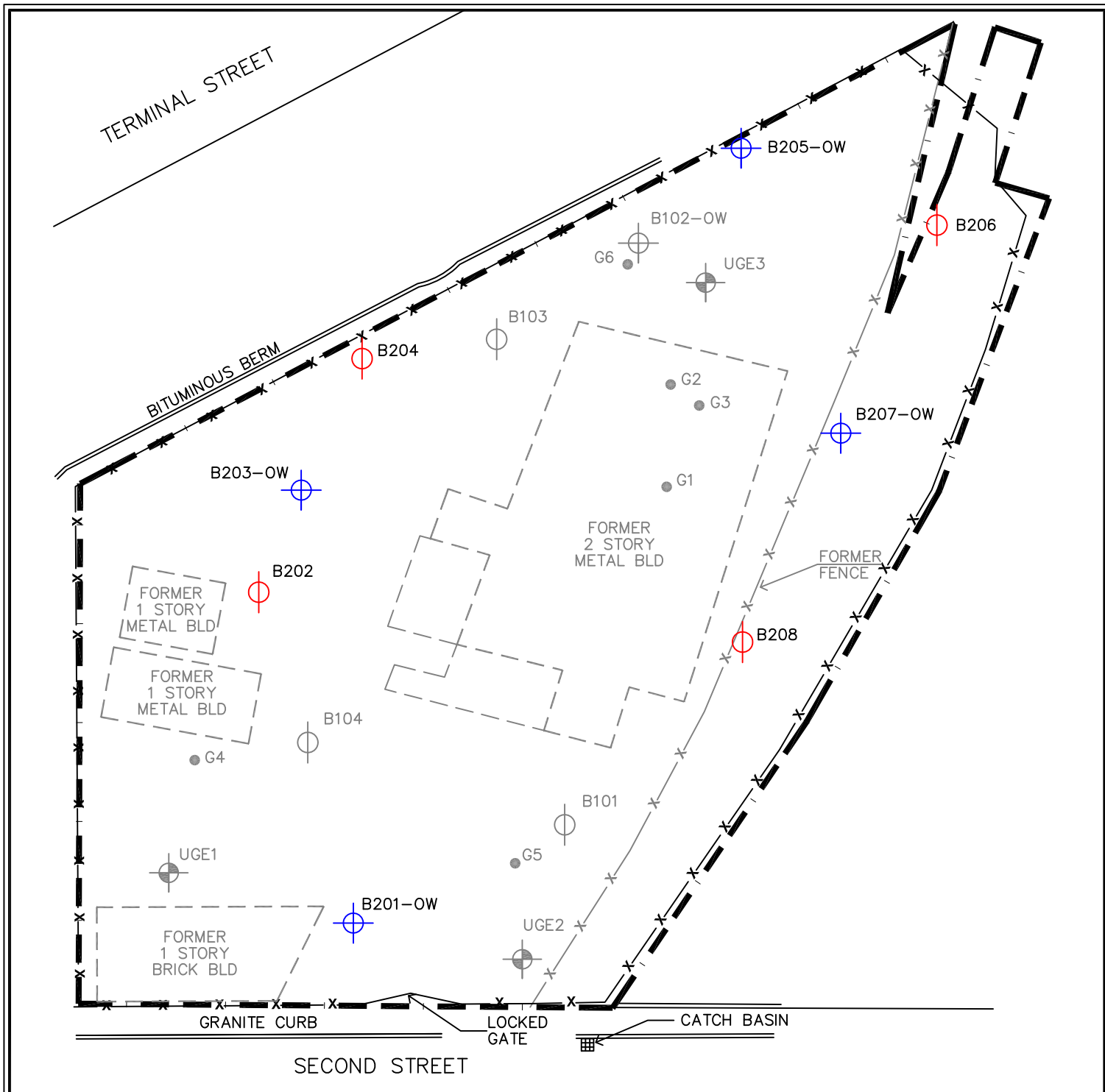
Date: FEB 2009

Job No: 704.01



Figure

4



#### LEGEND

- |  |                                       |  |                    |
|--|---------------------------------------|--|--------------------|
|  | MONITORING WELL<br>PLACED BY TGG-1987 |  | PROPERTY<br>LINE   |
|  | SOIL BORING<br>PLACED BY UE           |  | FORMER<br>BUILDING |
|  | MONITORING WELL<br>INSTALLED BY UE    |  | FENCE LINE         |
|  | SOIL SAMPLE<br>TAKEN BY UE            |  |                    |

REFERENCE: Release  
Abatement Measure  
Completion Report,  
413-421 Second  
St-Everett Ma:  
prepared by  
Underground  
Engineering 8-8-08.

SKETCH PLAN OF SITE  
413-421 SECOND STREET  
EVERETT, MASSACHUSETTS  
APPROXIMATE SAMPLE  
LOCATIONS: 2005

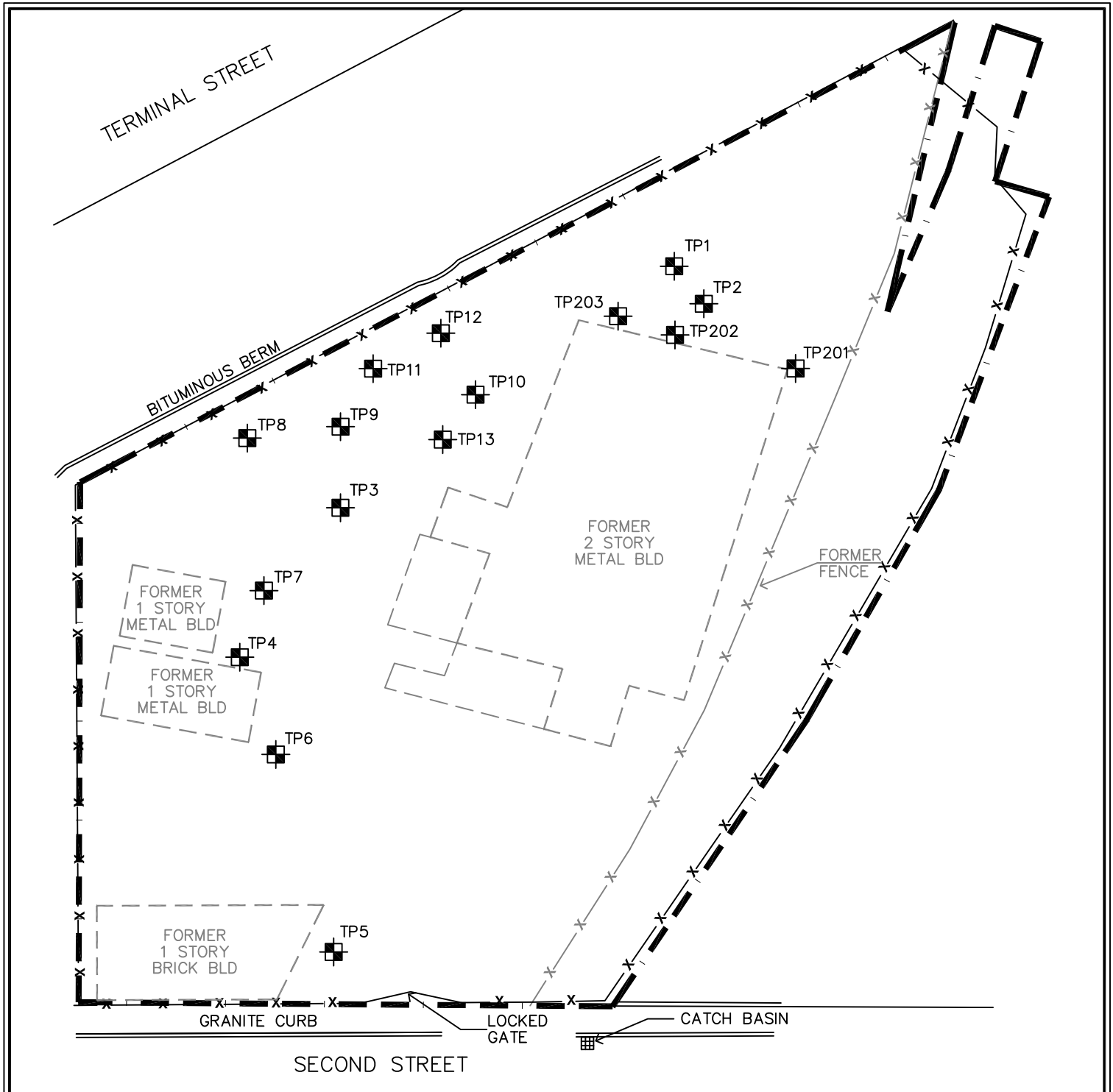
0 20 40  
Approximate Scale In Feet

Date: FEB 2009

Job No: 704.01



Figure  
**5**



<div>LEGEND</div> <div><div><div><div></div></div><div>TEST PIT LOCATION</div></div><div><div><div></div></div><div>PROPERTY LINE</div></div><div><div><div></div></div><div>FORMER BUILDING</div></div><div><div><div></div></div><div>FENCE LINE</div></div></div>		<div>REFERENCE: Release Abatement Measure Completion Report, 413-421 Second St-Everett Ma: prepared by Underground Engineering 8-8-08.</div>		<div>SKETCH PLAN OF SITE 413-421 SECOND STREET EVERETT, MASSACHUSETTS</div> <div>APPROXIMATE TEST PIT LOCATIONS</div>	
		<div>02040</div> <div>Approximate Scale In Feet</div>			
		<div>Date: FEB 2009</div>		<div>Figure 6</div>	
<div>NCA Nangle Consulting Associates, Inc. 960 Turnpike Street Canton, Massachusetts</div>		<div>Job No: 704.01</div>		<div><div></div></div>	



Based upon the results obtained through the completion of the assessment activities described above, Underground rendered the following conclusions within their December 2005 Phase I report.

- Analyses have been completed of groundwater from 8 monitoring wells and a test pit and of three soil samples from the ground surface and from 12 soil test borings and a half-dozen backhoe excavated test pits. These have revealed two sources of contamination at the site.
- Petroleum product is present along the foundation wall at the rear of the main warehouse building in the vicinity of the former underground storage tank. The presence is not measureable as soil contamination. It also does not appear to be migrating as it is not showing up in test boring samples. Although this condition might possibly be abated with a passive recovery system, it will be included in the risk assessment analyses.
- Apparently, a combination of historic import of contaminated fill and the operation of the former smelting operation has resulted in metal contamination (including lead and zinc) of the fill at the property. No pattern of deposition has been discerned although levels reported on adjacent properties are significantly lower. It appears that deposition was primarily on the west side and north of the warehouse structure.
- PAHs, ubiquitous in the urban industrial environment are, as expected, present in soil at the property in similar levels to those reported as numerous sites in this section of Everett. PAHs present at concentrations above the MDEP published background concentrations for fill material containing coal or wood ash will be included in risk assessment analyses.

The contaminants of concern at this site therefore may include:

- Petroleum from the former underground storage tank. This contaminant appears to be limited to the immediate vicinity of the former tank and assessment will be required to determine the appropriate response action.
- Arsenic, Lead, Antimony, Nickel and Zinc as well as Benzo[a]Anthracene, Benzo[b]Fluoranthene, Benzo[k]Fluoranthene, Chrysene, Dibenzo[a,h]Anthracene, Indeno[1,2,3-cd]Pyrene, and Phenanthrene in exterior soil.
- Water analyses appear to indicate that groundwater meets acceptable standards for this area. Additional work is proposed to corroborate this conclusion in relation to lead, zinc and other priority pollutant metals and PAHs noted in the soil at the site.

As described in further detail within Section 4.3 of the report, exceedances of Upper Concentration Limits (UCLs) for lead were detected by Underground at several locations within the fill unit that extends across the site. UCL exceedances for nickel (1 location) and zinc (3 locations) were also identified. With regard to the potential for leaching into site groundwater, Underground submitted several samples for analyses utilizing the Synthetic Procedure Leaching Potential (SPLP) procedure. As discussed further within Section 4.3.2, the SPLP testing indicated that the site soils tested exhibited concentrations of lead that could potentially leach to groundwater at concentrations that exceed the applicable GW-3 risk based standards. It should be noted however that the most recent analyses of groundwater at the site by Underground did not

reveal any detectable concentrations of lead and the continued monitoring of groundwater quality is recommended to further document this condition.

#### 4.2 RAM Activities Overseen by Underground Engineering, LLC

In response to the conditions encountered at the site during subsurface investigations, Underground prepared a RAM plan, which was submitted to MDEP on 7 February 2007. RAM activities were reportedly conducted at the site in the spring of 2007 and a RAM completion report was prepared by Underground and filed with MDEP in August of 2008. According to the completion report, pre-RAM and RAM activities completed at the site included the following;

##### Pre-RAM Activities

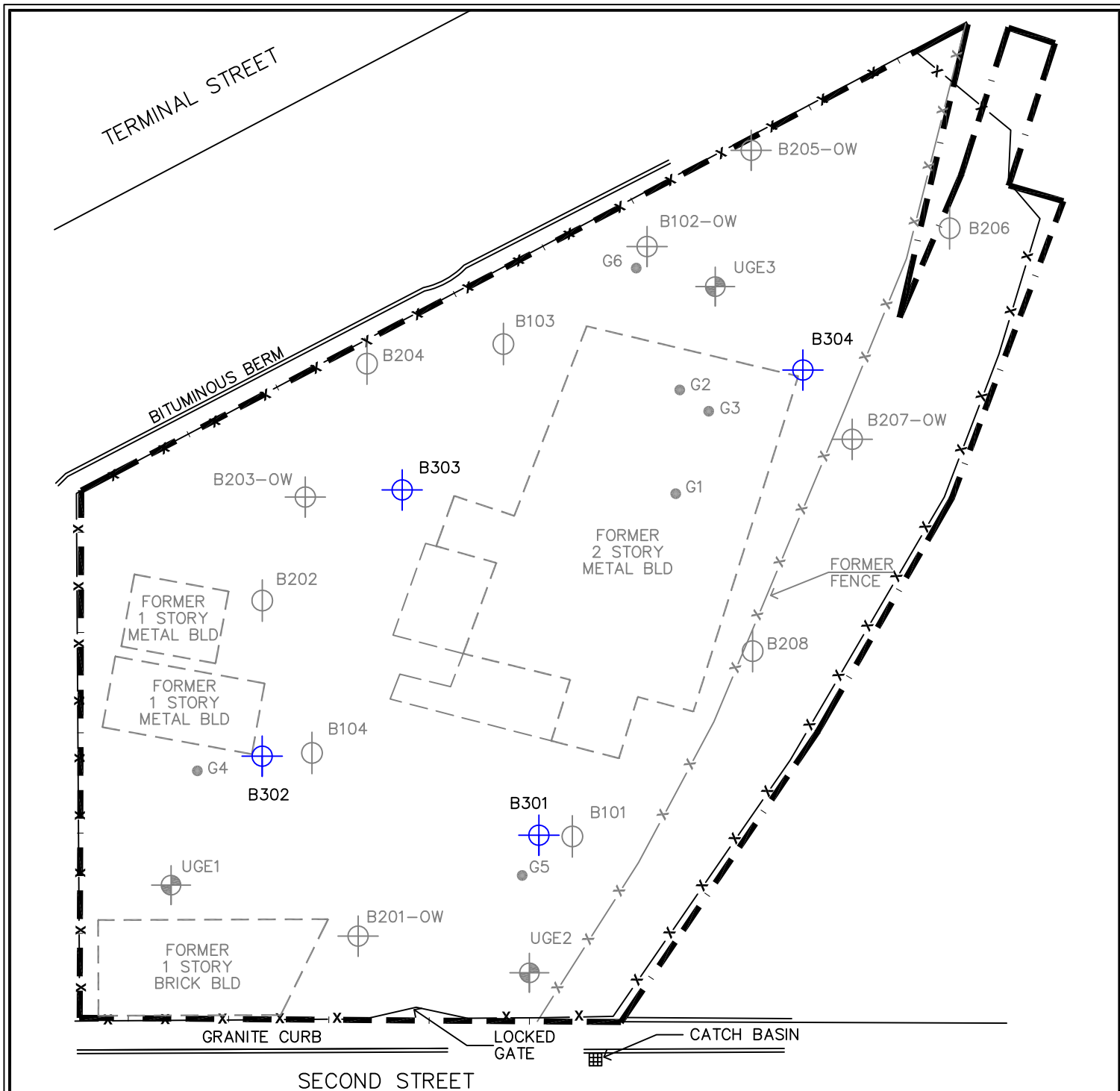
- A thorough cleaning of the interior of the structures for dust control
- The removal of four structures for the premises including a 7,000 square foot metal clad building, a 1,500 square foot brick building and two sheds

##### RAM Activities

- Crushing of concrete from foundations and floor slabs for reuse as fill in accordance with the ABC Rubble policy
- Grading of the site to provide a reasonably smooth surface for drainage and for traffic
- Paving the site with a 12-inch thick layer of recycled asphalt. This layer inhibits access to underlying soil and provides a structural base course from the support of the final pavement section and engineered barrier
- Analysis and assessment of groundwater conditions to show that migration of contaminants in groundwater is not occurring at the site.

All crushed foundation and slab materials were reused on site prior to the placement of the 12-inch thick layer of recycled asphalt. At the time the RAM plan was implemented, it was anticipated that an engineered barrier was going to be constructed across the site due to the levels of metals present in site soils. As discussed in further detail within Section 7.0 of this report, an updated evaluation of feasible alternatives based in part on the most recent groundwater data has revealed that an engineered barrier is not an ideal solution for the site at this time, considering the possible impacts to future redevelopment activities at the site.

As a part of RAM activities three (3) additional test borings, designated as B-301 through B-303 were advanced and completed as 2-inch diameter observation wells in the approximate locations depicted on Figure 7 in March of 2008. In addition, a 14" diameter observation well designated as B-304 (Figure 7) was also installed at that time proximate to the northeast corner of the former on-site building where prior indications of petroleum residuals had been observed. According to the August 2008 RAM completion report, periodic inspections of the 14" diameter well made by Underground over a four month period reportedly did not reveal any indications of non-aqueous phase liquids.



#### LEGEND

- |  |                                       |  |                    |
|--|---------------------------------------|--|--------------------|
|  | MONITORING WELL<br>PLACED BY TGG-1987 |  | PROPERTY<br>LINE   |
|  | SOIL BORING<br>PLACED BY UE           |  | FORMER<br>BUILDING |
|  | MONITORING WELL<br>INSTALLED BY UE    |  | FENCE LINE         |
|  | SOIL SAMPLE<br>TAKEN BY UE            |  |                    |

REFERENCE: Release  
Abatement Measure  
Completion Report,  
413-421 Second  
St-Everett Ma:  
prepared by  
Underground  
Engineering 8-8-08.

SKETCH PLAN OF SITE  
413-421 SECOND STREET  
EVERETT, MASSACHUSETTS  
APPROXIMATE SAMPLE  
LOCATIONS: 2008

0 20 40  
Approximate Scale In Feet

Date: FEB 2009

Job No: 704.01



Figure

7

In addition to the monitoring of the large diameter well, Underground also sampled and analyzed groundwater at monitoring wells B-301, B-302, B-303 and B-205 on 15 April 2008 for EPH, VPH and dissolved metals. Groundwater samples were collected utilizing low-flow sampling techniques. As discussed in further detail within Section 4.3 below, no significant levels of the tested constituents were detected.

#### 4.3 Summary of Soil and Groundwater Data Collected by Underground Engineering, LLC

Over the period of June 2004 through April of 2008 Underground collected numerous soil and groundwater samples from the site that were submitted for laboratory analyses. A summary of the soil and groundwater data obtained is presented within Sections 4.1 and 4.2 below respectively, while a review of the data quality and representativeness is presented within Section 5.0 of this report.

##### *4.3.1 Soil Analytical Data Collected by Underground*

During the course of Undergrounds assessment program at the site, numerous soil samples were submitted for laboratory analyses of MDEP EPH/VPH and corresponding target compounds, PAHs via EPA method 8270, volatile organic compounds (VOCs), and metals. In addition selected soil samples were also submitted for the synthetic precipitation leaching procedure (SPLP) to evaluate the potential for elevated levels of lead in site soils to leach to groundwater at significant concentrations. A summary of the soil laboratory data obtained by Underground is presented within Tables 1.0 – 6.0, while copies of the laboratory certificates are presented within Appendix C.

As indicated from a review of Table 1.0, with the exception of samples B104-4, TP1-1 and TP2-1, only low levels of EPH fractions were identified in site soils. Slightly elevated PAH target compounds were also identified in sample B104-4. VPH and target VOC analyses (Table 2.0) did not reveal any significant levels of fractions or target compounds in site soils. As summarized on Table 3.0, a total of 19 samples were collected from exterior portions of the site and submitted for laboratory analyses of PAHs via EPA method 8270. Elevated levels of PAH compounds were detected at sample location B201-S-3, B202-S-1 and B205-S-3. A review of the borings logs for the site reveals that cinders were detected at a number of boring locations, including B201 and B205, with the fill unit identified across the property ranging in thickness from 6 to 16 feet.

Three soil samples were submitted by Underground for laboratory analyses of VOCs via EPA method 8260B. As summarized on Table 4.0, trace levels of trichloroethylene and naphthalene were detected in shallow soil sample locations B103-1, B103-2 and B104-1. A total of 35 soil samples and two (2) interior building floor slab samples collected at the site by Underground were submitted for laboratory analyses of metals during the course of their assessment program. As indicated from a review of Table 5.0, the principal metals detected at elevated concentrations across the site included antimony, arsenic, and lead. Elevated levels of cadmium, nickel and zinc were also detected at discrete locations across the site. Specifically,

UCL exceedances for metals at the site include lead (11 locations), nickel (1 location) and zinc (3 locations), with lead being the most prevalent metal detected at the site. It is also noted that surficial samples collected from the floor of the former onsite building exhibited lead levels ranging from 9,320 to 668,000 mg/kg. A sketch plan depicting the distribution of lead concentrations in soils including the location of the exceedances of the UCLs for lead is presented as Figure 8.

Underground submitted several soil samples collected from test pits TP4 and TP5 for SPLP analyses to determine if there was any significant leaching potential from the lead in site soils, the results of which are summarized on Table 6.0. As shown on Table 6.0, exceedances of the GW-3 standards, presented for comparison, were identified in two of the samples where elevated levels of lead were present in the soil sample. As described in further detail within the following section, and while subject to further monitoring, the most recent groundwater data collected by Underground did not reveal any detectable concentrations of lead in site groundwater.

#### *4.1 Groundwater Analytical Data Collected by Underground*

Groundwater analyses completed by Underground Engineering at the site has included EPH, VPH and their respective target compounds, PAH analyses via EPA method 8270 and metals. As discussed within Section 4.1, Underground completed several iterations of site assessment activities and installed supplemental/replacement wells during each successive phase. A sketch plan depicting all of the monitoring well locations utilized by Underground over the course of their investigation is presented as Figure 9, with the currently existing wells shown in bold.

A summary of the EPH data obtained by Underground is presented on Table 7.0 and as shown, with the exception of TP-1 groundwater data, no indications of EPH targets or fractions were identified at the well locations that were sampled. TP-1 was placed in the approximate general area of former underground storage that was removed from the site in the 1980's. It should be noted that based upon the information contained within the Phase I and Phase II reports, it appears the sample TP-1 was a grab water sample from an open excavation and as such is not likely representative of actual groundwater quality. PAH analyses at the three B-1 series wells in June of 2004 revealed trace levels of several PAH compounds in groundwater at B-2, while an update of groundwater quality across the B-200 series wells in May of 2005 revealed trace levels of PAHs at B-201, B-203, B-205 and B-207 (Table 8.0). VPH analyses (Table 9.0) completed by Underground in July of 2004 and April of 2008 resulted in the detection of C9-C10 aromatics at monitoring well B-102 MTBE at B205. The levels detected, however were below the GW-3 standards.

An analysis of groundwater for metals by Underground was performed several times at numerous well locations utilizing different sampling methodologies over the period of June 2004 through April of 2008. A summary of the metals data obtained by Underground is presented on Table 10.0. Initial sampling completed in 2004 was conducted using bailers to collect groundwater samples, while subsequent sample events were completed using low flow sampling techniques. As indicated from a review of Table 10.0, elevated levels of lead and zinc were detected in groundwater during the initial sampling event, however, the levels detected represent data collected using bailer techniques and based upon the laboratory certificates, it is unclear

TERMINAL STREET

BITUMINOUS BERM

FORMER 2 STORY METAL BLD

FORMER 1 STORY METAL BLD

FORMER 1 STORY METAL BLD

FORMER 1 STORY BRICK BLD

GRANITE CURB

LOCKED GATE

CATCH BASIN

SECOND STREET

B205-OW  
0-2 14,300  
4-6 558

B102-OW  
0-2 29,000  
4-6 2590

B206  
0-2 470  
4-6 265

G6  
Surface 4130

B103  
0-2 155,000  
2-4 25,500

G2  
Surface 9320

G3  
Surface 247,000

B207-OW  
0-2 272  
2-4 381

G1  
Surface 668,000

B204  
0-2 568  
2-4 9350

B203-OW  
0-2 37.5  
2-4 184

B202  
0-2 1970  
2-4 724

TP4  
0-1.3 26.6  
1.3-2 1470

B104  
0-2 2290  
2-4 2910  
4-6 1210  
6-8 10,900

G4  
Surface 1810

B101  
10-12 23.4  
15-17 12.4  
20-22 13.4

B208  
0-2 855  
2-4 405

G5  
Surface 15,600

B201-OW  
0-2 2740  
4-6 125

TP5  
0-1 14,500  
1-2 84,500

REFERENCE: Release Abatement Measure Completion Report, 413-421 Second St-Everett Ma; prepared by Underground Engineering 8-8-08.

# LEGEND

MONITORING WELL PLACED BY TGG-1987

SOIL BORING PLACED BY UE

TEST PIT PLACED BY UE

MONITORING WELL INSTALLED BY UE

SOIL SAMPLE TAKEN BY UE

PROPERTY LINE

FORMER BUILDING

FENCE LINE

B206  
0-2 470  
SAMPLE DESIGNATION  
SAMPLE DEPTH/  
LEAD CONC. IN SOIL  
(mg/kg)

10,900  
LEAD CONCENTRATION  
> UCLS

SKETCH PLAN OF SITE  
413-421 SECOND STREET  
EVERETT, MASSACHUSETTS  
LEAD CONCENTRATIONS  
IN SOIL (mg/kg)

0 20 40  
Approximate Scale In Feet

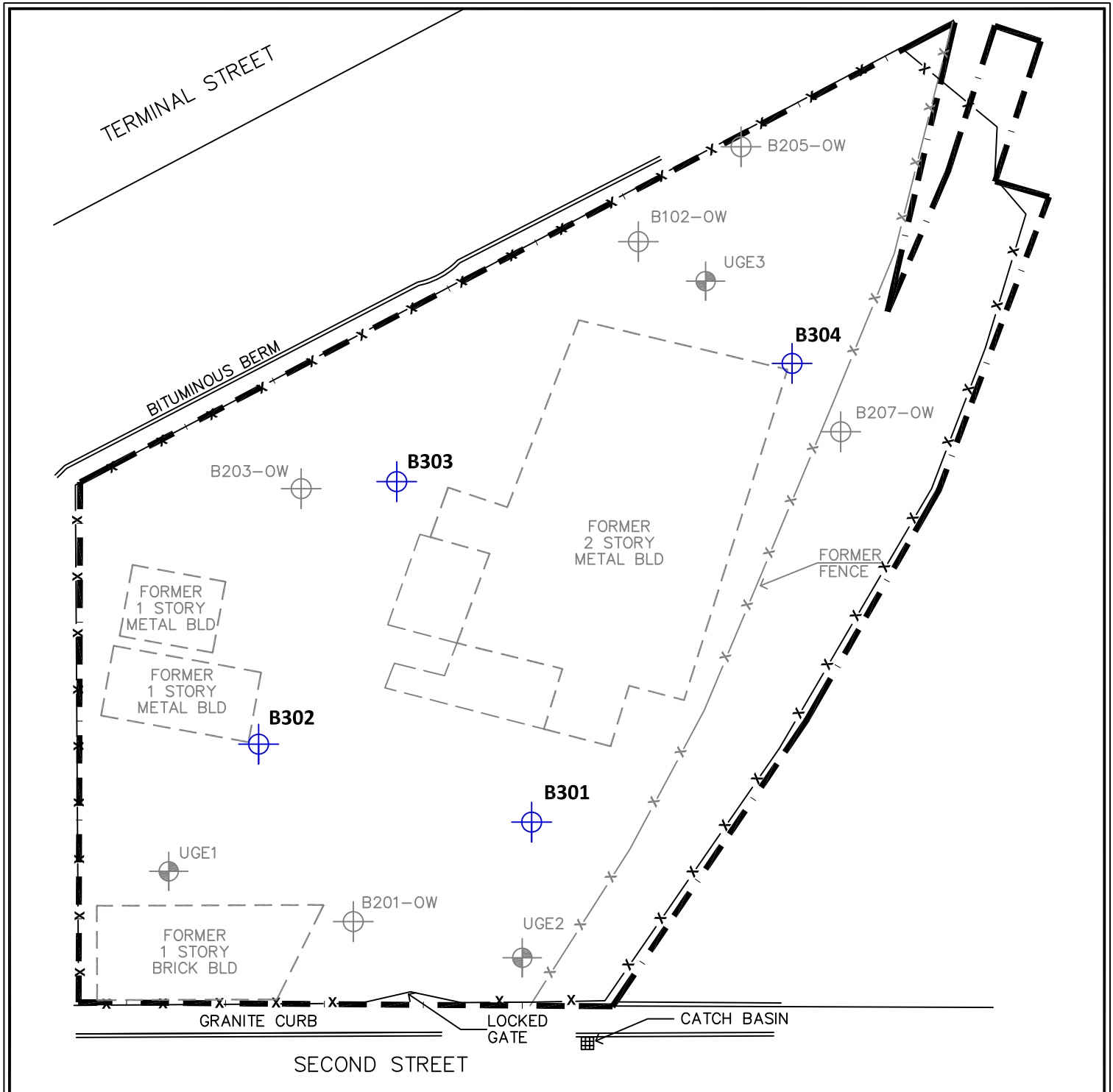
Date: FEB 2009

Job No: 704.01




Figure




8

NCA Nangle Consulting Associates, Inc. 960 Turnpike Street Canton, Massachusetts



# LEGEND

-  EXISTING MONITORING WELL  
**B302**
-  MONITORING WELL PLACED BY TGG-1987
-  MONITORING WELL INSTALLED BY UE

-  PROPERTY LINE
-  FORMER BUILDING
-  FENCE LINE

REFERENCE: Release Abatement Measure Completion Report, 413-421 Second St-Everett Ma: prepared by Underground Engineering 8-8-08.

## SKETCH PLAN OF SITE 413-421 SECOND STREET EVERETT, MASSACHUSETTS APPROXIMATE MONITORING WELL LOCATIONS

0 20 40  
Approximate Scale In Feet

Date: FEB 2009

Job No: 704.01



Figure  
**9**

whether the data represents total or dissolved metals concentrations. The expanded monitoring well network was re-sampled in July of 2004 and May of 2005 utilizing low flow sampling procedures, with lead detected at B3, B102, B201, B203, B205 and B207, as well as cadmium and zinc at B3.

Following the demolition of the onsite buildings and the placement of the recycled asphalt layer across the site, the B-300 series wells were installed by Underground and sampled, along with B205, for dissolved metals concentrations in April of 2008 utilizing low flow sampling techniques. As presented on Table 10.0, no detectable concentrations of metals above the method quantitation limits were indentified.



## ***5.0 Data Representativeness Evaluation and Usability Assessment***

Pursuant to the requirements established within Section 40.1056(2)(k) of the MCP, a data representativeness evaluation and usability assessment has been completed in accordance with guidance provided within MDEP policy #WSC-07-350 for the data considered in rendering the opinions presented within this submittal. It is to be noted that the data set described in the following sections was obtained by Underground during the completion of Response Actions at the Second Street property. As such, opinions pertaining to specific issues such as sample locations, collection and handling practices subject to the inherent constraints and limitations offered by peer review of the documentation referenced herein.

### ***5.1 Representativeness Evaluation***

#### ***5.1.1 Conceptual Site Model***

The project site is located in an industrial/commercial portion of the City of Everett. The review of available site history information indicates that the local study environment consists of marshy areas that were filled in stages between the mid to late 1800s through the early 1900s to support initial land use practices within this portion of Everett. Environmental studies by Underground and others have revealed that the general composition of fill may be described as “urban” materials including brick, ash, wood and cinders ranging in thickness from approximately 6-16 feet from surface grade, atop native peat and clay. Depths to groundwater at the site have been encountered at approximately 3 to 7 feet from surface grade and, as such, seasonally intercept the urban fill unit.

Contaminants of Concern (COCs) identified within the fill unit include metals, PAHs and petroleum hydrocarbons. In general, contaminants may be described as a heterogeneous mixture within the fill layer and consistent with the above description of land use development, is assumed to extend to the limits of the property boundaries. Contaminant distribution generally exhibits a lower and vertically decreasing concentration gradient within southerly portions of the site, with the highest metal levels and EPH constituents identified proximate to former structures and areas of high use associated with former land use activities.

The principal site contaminant is lead, which is attributed to the former land use as a lead smelting facility. As stated above, the highest levels of lead were detected in pre-RAM sampling of surficial soils in central portions of the site proximate to the former on-site building as shown in Figure 8. Lower levels of lead were identified within the railroad easement portion of the site and generally, towards the property boundaries. As a part of RAM activities completed in the spring of 2008, a layer of recycled asphalt was paced across majority of earthen areas across the site. The parcel is currently vacant and enclosed within a locked chain link perimeter fence, effectively restricting access to the site.

The most recent evaluation of groundwater quality across the site by Underground did not reveal any exceedances of applicable regulatory threshold values, however, based upon the historic database, continued monitoring of groundwater quality is recommended to confirm the representativeness of this most recent sampling event. The project site is currently gated, locked and unoccupied and as such, there are no current exposures to site contaminants. Future uses that could result in exposure include dust inhalation from pedestrian/vehicle traffic and exposure during any subsurface excavation. As such, the potential human receptors identified at the site that may be exposed to site contaminants include future occupants and/or construction workers during any future subsurface excavation. No significant environmental receptors have been identified, or are likely to be present given the relative poor habitat quality within the release area.

### *5.1.2 Use of Field/Screening Data*

A review of the available Underground documentation pertaining to response actions completed at the 413-421 Second Street site, reveals several references to the use of field screening procedures for total VOCs headspace levels. However, no tables, description of instrumentation or methodologies utilized were included. As such, field data has not been utilized to support the opinions and conclusions of this RAO.

### *5.1.3 Sampling Rationale, Number, Spatial Distribution and Handling of Samples*

It appears that sample locations addressed by Underground were influenced in part by prior sampling locations, conditions encountered in the field and physical impediments to sampling in the field (i.e., structures). The release of metals, PAHs and EPH compounds has been attributed in part to former land use practices. This condition is present within an urban fill unit that in the absence of COCs would likely to be subject to, at least in part, the regulatory exemption processes pertaining to this geologic condition. A total of 19 test borings, 16 test pits and 12 monitoring wells were placed during the assessment of site conditions. Sample collection and corresponding laboratory analyses was biased towards the shallow soil unit. Multiple sampling events were conducted in areas containing any significant indications of hazardous materials to 1) confirm the presence of the constituent; and 2) to delineate the release condition.

The soil data obtained during the completion of response actions was deemed sufficient to conservatively determine appropriate exposure point concentrations, to identify exposure pathways and receptors and to establish the general nature and extent of the release. The sampling database in soil is also deemed sufficient to support the consideration of viable remedial alternatives. As discussed in detail within Section 4.0 of this report, initial groundwater monitoring by Underground revealed exceedances of applicable Method 2, GW-3 standard at several locations across the site. However, the most recent sampling event by Underground did not reveal any significant levels of metals, EPH/VPH fractions or target compounds. Based upon these results, Underground concluded that there were no significant impacts to groundwater at the site. NCA recommends that the monitoring of groundwater quality be continued to confirm the representatives of the data obtained during the most recent sample event.

### *5.1.4 Temporal Distribution of Samples*

Based upon the nature of the historic fill unit at the site, it does not appear as though there is any appreciable temporal change in the distribution of hazardous constituents detected in site soils. Source conditions have been attributed to historic land use activities when the site was utilized as a lead smelting plant, possibly due to subsequent scrap metal operations and historic filling practices, with no ongoing source conditions identified. Since that time there have been no known activities that have further contributed to the release. As discussed above, further monitoring at the site has been proposed to ensure that there is no seasonal variation in groundwater quality.

### *5.1.5 Completeness*

No significant analytical data gaps were identified whose resolution would be required to support the selection of the temporary site remedy under consideration at this time. As stated previously, it is recommended that the representativeness of the most recent characterization of groundwater quality be confirmed through continued monitoring. Further, it is contemplated that the permanent site remedy will involve the construction of an Engineered Barrier during site redevelopment. At this time additional characterization of the shallow fill unit to support the design costs of this remedy alternative should also be performed. All critical samples identified were collected and satisfactory laboratory data obtained. Lead data for groundwater collected by Underground in June of 2004 was not used in the evaluation of risk, as the data was not considered to be representative of site conditions due to the age of monitoring wells and the consideration that this data represented total metals concentrations. Further, a groundwater sample collected by Underground for EPH from TP-1 in June of 2005 was not utilized in the evaluation of risk, as the Chain of Custody lists that there was limited sample volume and this was believed to be a grab sample of non-filtered or steady state groundwater within the open test pit excavation.

### *5.1.6 Inconsistency and Uncertainty*

As shown on Table 11.0, review of the laboratory certificates and chain of custodies for the groundwater sampling events conducted in June and July of 2004 and May of 2005 by Underground did not identify whether the metals analysis was total or dissolved. The chain of custody for the June 2004 sampling event does identify if the samples were preserved with HNO<sub>3</sub>, indicating that the samples were most likely analyzed for total metals. With the exception of the above referenced instances, no significant inconsistencies or sources of uncertainty were identified during the completion of assessment and/or response actions that would undermine the RAO opinion. In general the fill condition encountered at the site is consistent with conditions that have been documented and are prevalent within the study area.

### *5.1.7 Information Considered Unrepresentative*

Information considered to be potentially unrepresentative in the evaluation of the site was the total metals data for groundwater obtained in June of 2004 by Underground as well as the EPH data collected by Underground in June of 2005.

## *5.2 Data Usability Assessment*

### *5.2.1 Analytical Data Usability Assessments*

With regard to data quality, all data collected by Underground at the site was analyzed in accordance with MDEP's Compendium of Methods. The sensitivity of the majority of the data met project specific objectives such as detection limits lower than the applicable standards. NCA's review of the analytical soil data used to support the RAO found no major analytical deficiencies in the laboratory data. A comparison of the rejection criteria listed in Appendix IV

of the MCP Representativeness Evaluations and Data Usability Assessments Policy #WSC-07-350 indicates that none of the data contained exceptions in excess of the rejection criteria listed.

#### *5.2.2 Data Evaluation Criteria*

As a part of the laboratory sample submittal process, the applicable standards are identified to ensure that to the extent feasible, the method quantitation limits are at or below the applicable standards. Elevated detection limits are usually associated with significantly impacted samples requiring sample dilution to quantify. A review of the laboratory analytical data for this release condition has revealed that none of the quantitation limits were below the applicable standards.

#### *5.2.3 Field Data Usability Assessment*

Based upon a review of the laboratory certificates and chain of custodies, it appears that sampling protocols were maintained in accordance with the provisions of the CAM and in accordance with applicable MDEP analytical methodologies. All samples were submitted in the proper sample containers with the required preservatives and analyzed within the holding times established within the respective methods. All matrix spike and matrix spike duplicates were within acceptable limits. No significant indications of cross contamination were identified in any of the sample blanks.

#### *5.2.4 Rejection of Analytical Data as the Result of Gross Failure*

No laboratory samples submitted by Underground were rejected as the result of gross failure.

#### *5.3 Data Representativeness Evaluation and Usability Assessment Summary and Conclusions*

Based upon the data and information presented above, it is concluded that that data obtained and utilized in the development of the RAO-C opinion for this release condition is scientifically valid and defensible, and of sufficient accuracy, precision and completeness and that the spatial and temporal sampling is representative of the site and the release condition.

## **6.0 Substantial Hazard Evaluation**

Surface cover across the site consists predominantly of recycled asphalt and/or bituminous asphalt pavement. Several earthen areas exist along the northern and southern edges of the property; however access is restricted via a perimeter fence and locked gate. No environmental receptors have been identified within 500 feet of the project site. Further, no stressed biota or any visible indications of site contamination impacting environmental receptors has been observed. Specifically, none of the following criteria established within the MCP apply to the release condition at the 413-421 Second Street site.

### 40.0956: Substantial Hazard Evaluation

- (a) Evidence of stressed biota attributable to the release at the disposal site, including, without limitation, fish and wildlife kills or abiotic conditions;
- (b) The visible presence of oil, tar or other non-aqueous phase hazardous material in soil within three feet of the ground surface over an area equal to or greater than two acres, or over an area equal to or greater than 1000 square feet in sediment within one foot of the sediment surface;
- (c) Continuing discharge of contaminated groundwater to surface water where the levels of the oil or hazardous material attributable to the release already exceed Massachusetts Surface Water standards;
- (d) Continuing discharge of contaminated groundwater to surface water where surface water and/or sediment concentrations of Oil and/or Hazardous Material attributable to the release already pose a significant risk;
- (e) Migration of oil or hazardous material to additional environmental media or resource area where resultant exposures would have the potential to pose a significant risk of harm in the future; or
- (f) Ecological risk or harm such that recovery would be substantially more difficult or would require more time if conditions were to remain unremediated for even a short period of time.

As groundwater at the site is not located within an area designated as a Current or Potential Drinking Water Source, and there are no occupied buildings or structures on the property, there is no exposure to groundwater at the site. Given the absence of any current exposure to site contaminants, it appears that, while a condition of No Significant Risk has not been achieved, there is no substantial hazard to human health or the environment at the site. A Method 2 risk characterization and substantial hazard evaluation was completed previously for the site by the firm of Woodward and Curran in December of 2007, a copy of which is included within Appendix D. As indicated from a review of the Woodward and Curran document a conclusion of no substantial hazards was also determined at that time.

## **7.0 Phase III Remedial Action Plan**

This Phase III Remedial Action Plan (RAP) has been prepared pursuant to the provisions of Section 40.0850 of the MCP to document the evaluation of remedial alternatives considered to address residual concentrations of metals, petroleum hydrocarbons and PAHs identified in soil at 413-421 Second Street in the City of Everett, Massachusetts. The objective of this Phase III RAP was to identify viable response action alternatives that may be implemented to mitigate the potential for risk that may exist associated with the hazardous materials that have been identified in the subsurface at the site. It is noted that as discussed in Section 6.0 of this report, a condition of no substantial hazard has been achieved at the site through the elimination of potential exposure by way of a direct contact barrier and perimeter fencing.

### **7.1 Characterization of Site Risks and Identification of Remedial Goals**

As documented within the Underground Phase II Comprehensive Site Investigation report, assessment activities conducted at the site have revealed the presence residual petroleum, PAH and metals concentrations in soils at the site associated with historic land use/development practices. A characterization of the risks imposed by site conditions was completed by the Firm of Woodward & Curran (W&C) as a part of the Phase II study utilizing a Method 2 approach. The following are W&C's conclusions with regard to risk at the site, excerpted from the W&C document entitled "Method 2 Risk Characterization and Substantial Hazard Evaluation, 413-421 Second Street, Everett, Massachusetts, December 4, 2007", a copy of which is included within Appendix D.

- The Risk Characterization compares the soil and groundwater EPCs at the site to MCP Method 1 and 2 standards. Standards applicable to the site include GW-3 groundwater standards and S-1 and S-3 soil standards for GW-3 aquifers.
- Maximum detected concentrations of COPCs in groundwater were compared to Method 2 GW-3 standards as shown in Table 2. Maximum detected concentrations of cadmium, copper, lead and zinc exceeded the Method 2 GW-3 standards. All detected groundwater concentrations of other COPCs were below the applicable Method 2 GW-3 Standards.
- For soil, we compared average concentrations to only S-1/GW-3 standards, as these standards are the most conservative among the three soil categories. As shown on Table 1, mean concentrations of benzo(a)pyrene, chrysene, cadmium, chromium, copper, lead, nickel and zinc exceed the Method 2 standards. Mean concentrations of other COPCs are below the applicable standard; however, 75<sup>th</sup> percentile concentrations of antimony and arsenic also exceed their applicable standards.
- Soil and groundwater at the site are currently inaccessible and therefore, since there are no complete exposure pathways, there is no significant risk of harm to human health under current conditions. Because soil and groundwater EPCs exceed applicable MCP Method 2 standards, however, a level of No Significant Risk of harm to human health, welfare and the environment has not been demonstrated for reasonably foreseeable future site conditions.

- There are no materials in Site soils or groundwater that exhibit the characteristics of corrosivity, reactivity, flammability, or are considered infections or radioactive. Based on the current understanding, the conditions at the Site related to these compounds do not currently and will not in the foreseeable future pose a threat of physical harm or bodily injury to people.

While not a part of the W&C Risk Characterization, it should be noted that lead levels identified in site soils at several locations in the eastern and western portions of the parcel exceeded the applicable Upper Concentration Limits (UCLs) for soils. In addition to the Method 2 Risk Characterization, W&C also completed a Substantial Hazard Evaluation concluding that no substantial hazard to human health or the environment existed (Appendix D). This Phase III evaluation of remedial action alternatives has been prepared based upon the findings of Underground, as well as the conclusions with regard to risk provided by W&C and NCA's review of current site conditions.

It should be noted that subsequent to the completion of the Risk Characterization described above, additional groundwater data was obtained by Underground which contrary to the information considered by W&C, led Underground to conclude that no significant impacts to groundwater existed at the site. While subject to the recommended continuation of groundwater monitoring at the site, for the purposes of this remedial alternative analysis it is assumed that response actions are only required for soil at this time. In the event future monitoring reveals that there are in fact impacts to groundwater that require risk reduction measures, a re-evaluation of remedial alternatives for the site will be completed.

## 7.2 Identification of Remedial Alternatives

Based upon the data that has been obtained, the following alternatives have been considered for implementation to reduce the potential for any future risk at the site.

*Alternative 1 - Removal of all Contaminated Fill Materials*

*Alternative 2 – Removal of all Significantly Impacted Soils (above UCLs) and Implementation of Land Use Controls*

*Alternative 3 – Placement of an Engineered Barrier and Implementation of Land Use Controls*

*Alternative 4 – Restriction of Access to Eliminate Exposure Potential*

The evaluation of site conditions during Phase I and Phase II studies suggests that each of the alternatives identified above would be effective in mitigating the risk at the site and can be implemented in a reasonable manner that would not pose any significant risk of harm to health, safety, public welfare or the environment. Factors considered in the evaluation of these remedial alternatives include timeframes for implementation, feasibility or suitability to address site



specific variables identified during the completion of prior assessment activities, value engineering in terms of cost relative to efficiency and effectiveness of site remediation relative to future, risks to the general public and the site imposed during implementation, long term reliability and integration with elements of overall regulatory compliance program.

### *7.3 Detailed Evaluation of Remedial Alternatives*

A summary of the technical elements associated with each of the alternatives considered for the site is presented in detail within Sections 7.3.1 and 7.3.2 below. Based upon the specific application characteristics of each alternative relative to the disposal site characteristics, a comparative summary of the evaluation cited criteria within the MCP is presented in Section 7.4.

#### *7.3.1 Alternative 1: Removal of all Contaminated Fill Materials*

Excavation and off-site disposal of impacted soils is a proven technology for the remediation of site contaminants. As described within the Phase II Comprehensive Site Assessment Report, petroleum residuals, metals and PAHs have been identified within the fill unit across the site over an approximate area of 47,000 square feet (entire site) with an average vertical thickness of approximately 8 feet. For the purposes of evaluating this alternative, it is assumed that excavation will include the removal of all accessible soil pursuant to achieving background to the extent feasible. However it should be noted that the highest levels of site contaminants were identified in soil in central portions of the site proximate to the former on-site smelting facility, while lower levels were identified at the boundaries of the property and in particular along the southeastern property boundary.

Based upon the data obtained during Phase I/II assessment activities, impacted soils at the site are expected to extend below the groundwater table and as such, dewatering may be required to accommodate soil removal. In addition, based upon the levels of total metals detected in site soils, the soil has the potential to fail the Toxicity Characteristic Leaching Potential test, rendering it a hazardous waste for disposal purposes. Accordingly, and subject to bench scale testing, it is assumed for the purposes of this evaluation that the soil would need to be stabilized in situ to prevent leaching before excavation and off-site disposal.

While subject to further assessment that may reduce the volume of soils that would need to be removed, based upon the data obtained to date, it is estimate that the volume of soil that would require stabilization, excavation and off-site disposal would be in the range of 14,000 cubic yards which would correspond to approximately 21,000 tons of soil to be managed. The disposal costs alone for this volume of soil render this alternative infeasible as from a cost basis, as this approach may be orders of magnitude higher than the other viable alternatives that may be considered. Further, the cost of this approach is greatly disproportionate to the value of the property and the corresponding reduction in risk. Accordingly, a detailed analysis of anticipated costs was not completed for this alternative.

### 7.3.2 *Alternative 2 – Removal of all Significantly Impacted Soils (above UCLs) and Land Use Controls*

Alternative 2 involves the targeted removal of those soils exhibiting UCL exceedances and the implementation of land use controls or a Notice of Activity and Use Limitations (AUL). To implement the targeted soil removal it would be necessary to conduct further assessment in areas to the east and west of the former building location where UCL exceedances for metals were identified within the fill to more accurately define the horizontal and vertical extent of UCL exceedances.

The implementation of an AUL involves the restriction of those uses and/or activities that would result in an unacceptable level of risk. While there are no current exposure pathways, potential future exposures to site contaminants could occur as a result of a change to a more sensitive land use or any activities that would relocate the soil that is presently beneath the existing recycled asphalt cover. By formally restricting any such activities through the implementation of a Notice of AUL, the potential for those risks could be mitigated. This approach would result in a permanent solution. The following is a summary of anticipated tasks and corresponding cost estimates associated with the implementation of this alternative.

#### **Alternative 2 – Preliminary Cost Estimate**

<b><u>Task</u></b>	<b><u>Estimated Cost</u></b>
1. Supplemental Assessment Program	4,000 – 5,000
2. Targeted UCL Soil Removal (Assumes 2000 – 3000 tons)	292,000 - 434,000
a. Mob/De-Mob	2,000 – 4,000
b. Stabilization	50,000 – 75,000
c. Excavation/loading/grading	20,000 – 25,000
d. Off-site disposal	160,000 – 240,000
e. Grade restoration	50,000 – 75,000
f. Engineering/oversight	10,000 – 15,000
3. Regulatory compliance documentation (ie Phase IV, AUL, RAO)	20,000-25,000

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<b><i>Alternative 2 Estimated Cost</i></b>	<b><i>\$316,000 –\$ 464,000</i></b>
--------------------------------------------	-------------------------------------

*Note: cost estimate for Task 2 is subject to refinement upon the completion of Task 1*

### 7.3.3 Alternative 3 - Placement of an Engineered Barrier and Land Use Controls

Alternative 3 would involve the construction of an Engineered Barrier in accordance with MDEP guidance across the site to permanently eliminate the potential for exposure to soils containing metals at concentrations above applicable upper concentration limits. Once constructed, a notice of Activity and Use Limitations would be implemented and long term (30 year) maintenance and monitoring program along with a financial assurance mechanism would be established. As in the case of the preceding alternative, this approach assumes a continued absence of significant impact to groundwater would result in a permanent solution.

As the project site is currently vacant, the construction of an engineered barrier would be relatively simple to construct, with the installation of necessary drainage features and re-configuration of existing monitoring wells representing the only major constraints. The construction of an Engineered Barrier under current site conditions would limit the future use of the site to storage/parking in the absence of future site modifications. As described in Section 8.4, the feasibility of this alternative is significantly advanced through its implementation during future site redevelopment. The following is a preliminary estimate of the costs to construct an asphalt Engineered Barrier upon the site to achieve a Class A-4 permanent solution under the Massachusetts Contingency Plan as well as the estimated annual inspection and maintenance costs the will continue for a minimum of 30 years following the submittal of the RAO.

#### Alternative 3 – Preliminary Cost Estimate

<b><u>Task</u></b>	<b><u>Estimated Cost</u></b>
1. Installation of necessary drainage features	15,000 – 20,000
2. Construction of 5” asphalt Engineered Barrier <sup>1</sup>	50,000 – 75,000
3. Regulatory compliance documentation i. (ie Phase IV, AUL, RAO)	25,000-30,000
4. Post RAO inspection and maintenance (cost per year)	1,000 - 2,000
<b><i>Alternative 2 Estimated Cost</i></b>	<b><i>\$90,000 –\$ 125,000</i></b>
<b><i>Estimated Annual Costs (for 30 years)</i></b>	<b><i>\$30,000 -\$60,000</i></b>

<sup>1</sup> Alternative barrier construction may include reinforced concrete as a part of a redevelopment plan

#### 7.3.4 *Alternative 4 – Restriction of Access to Eliminate Exposure Potential*

This alternative would ensure that the current restrictions to access to the site and site soils remains in place through periodic inspections. Specifically, access to the site is currently prohibited by the existing perimeter fencing and a locked gate. Access to subsurface soils is restricted by the presence of a recycled asphalt layer that was placed during RAM activities under the direction of Underground. This approach would not achieve a permanent solution but it would represent a temporary solution and would require that steps be taken long term to achieve a permanent solution.

At a minimum, biannual inspections/reporting for the site would be performed to ensure that the restrictions to access and soil exposure remain in place. In accordance with the MCP, it would also be necessary to continue to maintain a Tier II permit as long as the temporary solution is in place, which would require refilling a permit extension request each year. Because of the temporary nature of this alternative the cost for implementation will include a cost for the filing of a Class C-2 RAO as well as annual costs for inspections and permit extension requests for as long as the site is in Class C-2 status (i.e. temporary solution with viable permanent solutions available)

#### **Alternative 4 – Preliminary Cost Estimate**

<b><u>Task</u></b>	<b><u>Estimated Cost</u></b>
Regulatory compliance documentation (ie RAO)	7,500- 9,500
Biannual Inspection and Status report (cost per year)	1,500 – 2,000
RAO C Annual Compliance Fee (cost per year)	800
Tier II permit extension (cost per year)	500 - 1,000
<hr/>	
<b><i>Alternative 2 Estimated Cost (for RAO-C filing)</i></b>	<b><i>\$7,500 –\$ 9,500</i></b>
<b><i>Estimated Annual Costs</i></b>	<b><i>\$2,000 - \$3,800</i></b>

#### 7.4 Comparative Evaluation of Remedial Alternatives

Pursuant to Section 40.0857 of the MCP, a comparative evaluation of the alternatives identified has been completed. The evaluation presented below was conducted considering the criteria established within the MCP.

##### Effectiveness

Each of the alternatives identified is expected to be effective in achieving a condition of No Significant Risk for current land uses and activities, while only Alternatives 1, 2 and 3 will achieve a condition of no significant risk for reasonably foreseeable land uses and activities. Alternative 1 which involves the complete removal of all impacted fill material would be the most effective solution in terms of risk reduction, while Alternative 4 would be the least effective, as it does not involve any additional risk reduction measures beyond what is currently in place.

##### Reliability

The reliability of the proposed alternatives decreases with each successive alternative with Alternative 1 being the most reliable, while the least reliable would be Alternative 4. The reliability of the solution is directly related to the magnitude of the risk reductions efforts implemented, irrespective of the actual risk imposed at the site.

##### Difficulty in Implementation

Each of the alternatives identified can be implemented with the necessary materials, equipment and services readily available. Further, each of the alternatives would likely meet any regulatory requirements for any approvals, licenses or permits required for implementation. Alternative 3 would require the construction of subsurface drainage features as the entire site would be covered with an impermeable barrier, adding to the complexity of this alternative. However, a coordination of the implementation of Alternative 3 with site redevelopment may improve the feasibility of implementation. The management of fill in Alternative 1 would also be more complex than the other alternatives. The least difficult alternative is Alternative 4.

##### Cost

Commensurate with the degree of difficulty in implementation, the cost of the alternatives ranging from highest to lowest corresponds to the order of the alternatives that have been presented with Alternative 1 representing the highest cost and Alternative 4 being the lowest. The cost of Alternative 1 relative to the value of the property and in comparison to the estimated cost for the other alternatives makes it an infeasible option for the site. The costs for Alternative 3 may be reduced significantly if necessary response actions can be incorporated into a site redevelopment plan.

## Risks

The risks considered in this alternative evaluation included those associated with the implementation of the alternative, as well as risks posed during the time period necessary to achieve the remedial objectives. Risks associated with implementation would be commensurate with the complexity of the alternative, which is in the order that they have been presented, ranking Alternative 1 as the highest and Alternative 4 as the lowest. Risk imposed during the time period of implementation would also be higher for Alternative 1, given the scope of activities required.

## Benefit

The objective of response actions at the site is to eliminate the potential for any future risk associated with the exposure metals, petroleum residuals and PAHs in soil. The principal benefit to excavation (Alternative 1) over the implementation of land use controls (Alternatives 2 and 3) is the reduction of site contaminants in the environment and the possible positive impacts that may have on property value. However, the effect on property value is likely relatively small considering the urban nature of the disposal site and surrounding study environs.

The principal benefit associated with the implementation of land use restrictions over excavation is cost. The costs for Alternatives 2 and 3 (land use restrictions) are orders of magnitude below those estimated for large scale soil excavation, while achieving the same level of risk reduction. While alternative 4 involves the least amount of risk reduction efforts, it represents the lowest cost alternative and provides for the flexibility of implementing either Alternative 2 or 3 at a later date in conjunction with potential site development opportunities that could serve to minimize the actual cost of those options through integration with site development tasks and provide a more beneficial and economically viable long term use of the property.

## Timeliness and Non-pecuniary Interests

In terms of achieving a permanent solution, Alternatives 1 -3 could likely be achieved within the same general timeframes. No significant differences in any non-pecuniary interests have been identified for the alternatives considered. Alternative 4 can be implemented immediately and would facilitate the re-establishment of compliance with the time frames established within the MCP for the implementation of response actions, potentially mitigating penalties issued by MDEP for non compliance.

### 7.5 Selection of Remedial Alternative and Implementation Schedule

Based upon the detailed evaluation of the four alternatives, the selected alternative for achieving an RAO at the site at this time, pursuant to the requirements established within the MCP, is Alternative 4. To achieve a permanent solution, Alternative 3 is considered the most feasible, however, to manage costs and increase the reliability of this risk reduction measure it is more practical to integrate implementation with proposed redevelopment plans that are currently

under consideration. The selected alternative generally involves the continued restriction of access to the site until such time that a viable land use plan has been developed whereby a permanent solution can be economically integrated. The principal benefit of the selected alternative is the lower cost, the timeliness of implementation relative to the deadlines set forth within the MCP and the flexibility afforded by the potential opportunity of integrating a permanent solution into a future site development plan that would maximize the use/value of the property. The selected alternative can be implemented immediately.

## *7.6 Permanent Solution Plan*

As a Permanent Solution is feasible but has not been achieved for the site, pursuant to the requirements established within Section 40.1051(4) (2) of the MCP, the following steps have been identified that are intended to facilitate the achievement of a Permanent Solution.

- 1) Installation of additional groundwater monitoring wells
- 2) Continued monitoring of groundwater for a minimum of one hydrologic cycle.
- 3) Installation of an Engineered Barrier, subject to final site development plans.
- 4) Implementation of a Notice of Activity and Use Limitations (AUL) for the site to eliminate the potential for future exposure.

It is expected that upon the completion of the tasks identified above, a Permanent Solution can be achieved for the site. The timing of the completion of a permanent solution at the site is subject to the future development plans for the site. It is proposed to maintain Class C-2 RAO status until such time that a viable development plan is available for the site that can economically incorporate the requirements of a permanent solution and ensure the best use/value is maintained for the parcel.

## **8.0    *Summary and Conclusions***

Based upon the results obtained through the completion of response actions by Underground and the corresponding evaluation of site risks by W&C together with NCAs review of available information and inspection of site conditions, further response actions are necessary at the site. The approximate boundaries of the release condition that is the subject of this submittal are presented on Figure 10 and generally coincide with the parcel property lines. The principal site contaminants that have been detected include metals, PAHs and petroleum hydrocarbons in soil. The source of the release conditions identified at the site has been attributed to historic use of the property as a lead smelting facility scrap metal operations, petroleum storage practices and historic filling activities that were completed to accommodate early site development. It is noted that no conditions have been identified that are indicative of any ongoing source or current exposure to site contaminants. Further, based upon a Substantial Hazard Evaluation, it is concluded that no Substantial Hazard currently exists at the site.

While a condition of No Significant Risk has not been achieved, as no substantial hazards have been identified and a plan to achieve a permanent solution has been developed, it is our professional opinion that the requirements of a Class C-2 Response Action Outcome have been met.



TERMINAL STREET

BITUMINOUS BERM

FORMER  
1 STORY  
METAL BLD

FORMER  
1 STORY  
METAL BLD

FORMER  
1 STORY  
BRICK BLD

FORMER  
2 STORY  
METAL BLD

FORMER  
FENCE




LOCKED  
GATE

GRANITE CURB

CATCH BASIN

SECOND STREET

# LEGEND

-  PROPERTY LINE
-  FORMER BUILDING
-  FENCE LINE

REFERENCE: Release  
Abatement Measure  
Completion Report,  
413-421 Second  
St-Everett Ma:  
prepared by  
Underground  
Engineering 8-8-08.

## SKETCH PLAN OF SITE 413-421 SECOND STREET EVERETT, MASSACHUSETTS

0 20 40  
Approximate Scale In Feet

Date: FEB 2009

Job No: 704.01



Figure  
2

## APPENDIX A

**NANGLE CONSULTING ASSOCIATES, INC.**  
**Environmental Engineering and Land Use Planning**

960 Turnpike Street, Canton, Massachusetts 02021

March 2, 2009

Chief Municipal Officer  
City of Everett  
484 Broadway  
Everett, Massachusetts 02149

RE: Response Action Outcome  
413-421 Second Avenue  
Everett, Massachusetts 02149  
**Release Tracking Number 3-24465**

Dear Sir/Madam:

As required by Massachusetts General Laws, Chapter 21E and Section 40.1403(3)(f) of Chapter 310 of the Code Massachusetts Regulations (CMR), please be advised that a Response Action Outcome Report has been prepared in accordance with the provisions of the Massachusetts Contingency Plan for the above referenced project site. A copy of this report has been submitted to the Northeast Regional Office of the Massachusetts Department of Environmental Protection (MDEP) in Wilmington, Massachusetts and is available for public review.

If you should have any questions or would like to obtain a copy of the report please feel free to contact this office at your convenience.

Very truly yours,

NANGLE CONSULTING ASSOCIATES, INC.

James P. Parker, L.S.P.

File No. 704.01

cc: MDEP Data Entry  
Everett Board of Health

## APPENDIX B

TEST BORING LOGS	- PROJECT -	BORING NO. <u>B-1</u>
	<u>413 Second Street</u>	SHEET <u>1</u> OF <u>1</u>
	<u>Everett, MA</u>	DATE <u>6/1/87</u> FILE <u>AH660</u>

BORING LOCATION See Sketch  
GROUND ELEV. NA  
DATE START 6/1/87 DATE END 6/1/87

<u>CASING</u>		<u>SAMPLER</u>	<u>GROUNDWATER READINGS</u>			
			<u>DATE</u>	<u>DEPTH</u>	<u>CASING AT</u>	<u>STABILIZATION TIME</u>
SIZE: _____ Auger	TYPE: _____ SS	OTHER: _____	6/1	4.71'	OW	2 hour
HAMMER: _____ lb.	HAMMER _____ 140	lb.				
FALL: _____	FALL: _____ 30"					

REMARKS:

1. A piece of gravel was stuck at the tip of the spoon.
2. Sample was moist.
3. Sample S-5 and S-5A was obtained by open hole technique.
4. Installed 2" PVC observation well to the depth of 14' lower 10' slotted, backfilled with ottowa sand, bentonite seal at 4 to 3 '. Protective roadway box/cement surface seal.



THE GEOTECHNICAL GROUP, INC.																													
TEST BORING LOGS				- PROJECT - 413 Second Street Everett, MA			BORING NO. <u>B-2</u> SHEET <u>1</u> OF <u>1</u> DATE <u>6/1/87</u> FILE <u>AH660</u>																						
BORING CO. <u>Carr Dee Corporation</u>				BORING LOCATION <u>See Sketch</u>																									
FOREMAN <u>J. DeSimone</u>				GROUND ELEV. <u>NA</u>																									
ENGINEER <u>J. Chan</u>				DATE START <u>6/1/87</u>			DATE END <u>6/1/87</u>																						
<div style="display: flex; justify-content: space-between;"> <div> <u>CASING</u>            SIZE: <u>Auger</u>            HAMMER: <u>1b.</u>            FALL: _____         </div> <div> <u>SAMPLER</u>            TYPE: <u>SS</u>            HAMMER <u>140 lb.</u>            FALL: <u>30"</u> </div> <div>           OTHER: _____         </div> </div>				<div style="text-align: center; border-bottom: 1px solid black;">GROUNDWATER READINGS</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>DEPTH</th> <th>CASING AT</th> <th>STABILIZATION TIME</th> </tr> </thead> <tbody> <tr> <td>6/1</td> <td>4.5'</td> <td>OW</td> <td>2 HOURS</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>						DATE	DEPTH	CASING AT	STABILIZATION TIME	6/1	4.5'	OW	2 HOURS												
DATE	DEPTH	CASING AT	STABILIZATION TIME																										
6/1	4.5'	OW	2 HOURS																										
DEPTH	CAS. BL. / FT.	SAMPLE				STRATA CHANGE/ DESC.	SAMPLE DESCRIPTION		NOTE																				
		NO.	PEN./REC.	DEPTH	BLOWS/6"																								
5		S-1	24/11	0-2	7-18-20-12	Fill	Grey to black fine to medium SAND, little Gravel, trace Silt, glasses, fabrics, brick fragments, and roots.		1																				
10		S-2	24/0	5-7	1-2-1-2	9.0	Olive grey fine(+) to medium SAND, little(+) Silt, little Gravel, fragments of brick, root fibers (slight fuel odor).																						
15		S-2A	12/3	7-8	2-3	Peat	Brown fibrous PEAT. [strong organic odor].																						
		S-3	24/15	10-12	1-1-1-2	14.0 Clay 15.0	Similar to S-3 Grey CLAY and SILT.		2																				
		S-4	36/12	12-14	Machine push	Bottom of Boring																							
		S-4A	/4	14-15	3-4																								

REMARKS:  
  
 1. A grab sample exhibited fuel odor was obtained from the auger flight from 4-5' depth (wet).  
  
 2. Installed 2" PVC observation well to the depth of 9 feet, lower 5 feet slotted, backfilled with ottowa sand, sealed with bentonite. Protective roadway box/cemented.

# THE GEOTECHNICAL GROUP, INC.

## TEST BORING LOGS

- PROJECT -

413 Second Street

Everett, MA

BORING NO. B-3

SHEET 1 OF 1

DATE 6/1/87 FILE AH660

BORING CO. Carr Dee Corporation  
 FOREMAN J. DeSimone  
 ENGINEER J. Chan

BORING LOCATION See Sketch  
 GROUND ELEV. NA  
 DATE START 6/1/87 DATE END 6/1/87

### CASING

### SAMPLER

### GROUNDWATER READINGS

SIZE: Auger TYPE: SS OTHER: \_\_\_\_\_  
 HAMMER: lb. HAMMER 140 lb.  
 FALL: \_\_\_\_\_ FALL: 30"

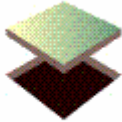
DATE	DEPTH	CASING AT	STABILIZATION TIME
6/1	2.7'	OW	0

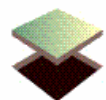
DEPTH	CAS. BL. / FT.	SAMPLE				STRATA CHANGE/ DESC.	SAMPLE DESCRIPTION	NOTE
		NO.	PEN./REC.	DEPTH	BLOWS / 6"			
5		S-1	24/12	0-2	2-3-1-2	Fill    5.0	Grey fine SAND some Silt.	
10		S-2	24/13	5-7	1-2-1-1	PEAT    10.5	Brown fibrous PEAT.	
		S-3	24/5	10-10.5	weight of rod	Silty Sand 11.0 12.0	Similar to S-2 Dark grey Organic SILT. Grey fine(+) to medium SAND, some Silt, little Gravel.	1
			/5	10.5-11	weight of rod			
						Bottom of Boring		

### REMARKS:

- Installed 2" PVC observation well to the depth of 8 feet, lower 5 feet slotted.  
 Backfilled with ottowa sand, bentonite seal at 3'6" to 4'. Protective roadway box/cemented.

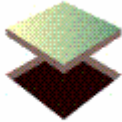


		<b>Underground Engineering LLC</b>						
		<b>-Test Boring Log-</b>			Boring No.	B-101		
		413-421 Second Street Everett, MA				Sheet 1 of 2		
					File No.	O4-002		
			Reviewer	JMH				
Boring Company	Able Soils-Earth Tech, Inc.			Boring Location	See Plan			
Foreman	Steve Perry			Ground Elev.	NA			
Observer	James Hardin			Date Start - End	July 13, 2004			
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches				<b>Ground Water Readings (See Notes)</b>				
				Date	Time	Depth to Bottom	Depth to Water	Rem
				7/13	9 am	53	5'	
<b>Sample Data</b>				Strata Change	Sample Description			
5	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Fill	Bl. And Br. Sand and Silt, Some Gravel, Trace Organics, Cinders, Rock Fragments  - No Recovery  - No Recovery
	S-1	0 - 2	29-19-14-10	24	0			
10	S-2	5 - 7	3-9-3-3	24	0	1	Peat	Tan fibrous Peat
	S-3	7 - 9	1-1-2-2	24	0			
15	S-4	10-12	1/12"-1-1	24	24	3	Silt	Grey Silt, Some Fine Sand
20	S-5	15-17	1-3-7-11	24	24		Boston Blue Clay	Grey Blue Clay or Silty Clay
25	S-6	20-22	1-2-5-5	24	2		Boston Blue Clay	
	S-7	25-27	2-2-3-4	24				
			10			5		
			13					
			19					
<b>Remarks:</b> 1. Wet silt on auger 2. Wet soft clay on auger 3. Peat from 10 feet to 12 feet 4. Encountered clay at about 18 feet. 5. Drove open end rod with 140 lb. hammer to depth of 43 feet,								




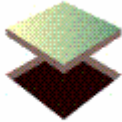




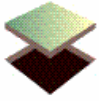
		<b>Underground Engineering LLC</b>							
		<b>-Test Boring Log-</b>			Boring No.	B-102-OW			
		413-421 Second Street Everett, MA				Sheet 1 of 1			
					File No.	O4-002			
			Reviewer	JMH					
Boring Company	Able Soils-Earth Tech, Inc.			Boring Location	See plan				
Foreman	Steve Perry			Ground Elev.	NA				
Observer	James Hardin			Date Start - End	July 13, 2004				
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches				<b>Ground Water Readings (See Notes)</b>					
				Date	Time	Depth to Bottom	Depth to Water	Rem	
<b>Sample Data</b>									
<div style="display: flex; align-items: center;"> <div style="width: 20px; text-align: center; margin-right: 5px;">5</div> <div style="width: 20px; text-align: center; margin-right: 5px;">10</div> <div style="width: 20px; text-align: center; margin-right: 5px;">15</div> <div style="width: 20px; text-align: center; margin-right: 5px;">20</div> <div style="width: 20px; text-align: center; margin-right: 5px;">25</div> </div>	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	<div style="display: flex; align-items: center;"> <div style="width: 100px; text-align: center; margin-right: 5px;">Strata Change</div> <div style="width: 500px; text-align: center; margin-right: 5px;">Sample Description</div> </div>		
	S-1	0-2	10-13-21-24	24	6			Fill      	Dark Brown and Black Sand and Gravel, Some Organics, Brick Fragments Grey Brown Mottled Sand and F. Gravel, Little Silt, Brick Fragments  Grey Brown Silty Sand, Little Fine Gravel, Wood, Brick, Cinders
	S-2	2-4	13-14-13-12	24	6				
	S-3	4-6	5-6-3-3	24	0				
	S-3A	6-7	1-2	12	0	1			
	S-4	7-9	3-4-3-4	24	12				
								Peat	Brown Fibrous Peat
	S-5	10-12	1-1-1-2	24	24				
								Boston Blue Clay	Medium Stiff Yellow-Blue Clay  Stiff Yellow-Blue Clay
	S-6	15-17	5-10-13-23	24	24	2			
	S-7	20-22	4-5-7-9	24	24				
								BOH 24'	Bottom of Hole at 24 ft.
	S-8	22-24	4-8-14-18	24	24				

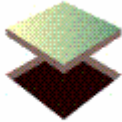
Remarks:  
 1. Overdrove spoon  
 2. Bottom of Hole at 24 feet, stopped in clay



		<b>Underground Engineering LLC</b>						
		<b>-Test Boring Log-</b>			Boring No.	B-103		
		413-421 Second Street Everett, MA				Sheet 1 of 1		
					File No.	04-002		
			Reviewer	JMH				
Boring Company	Able Soils-Earth Tech, Inc.			Boring Location	See plan			
Foreman	Steve Perry			Ground Elev.	NA			
Observer	James Hardin			Date Start - End	July 13, 2004			
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches				<b>Ground Water Readings (See Notes)</b>				
				Date	Time	Depth to Bottom	Depth to Water	Rem
<b>Sample Data</b>							<b>Strata Change</b>	<b>Sample Description</b>
5	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Fill	Black Silty-Sand, Little Fine Gravel, Brick Brown Fine to Medium Sand, Little Silt, Trace Fine Gravel Brown Black Silt and Sand, Little Coarse Sand and Fine Gravel
	S-1	0-2	9-15-13-15	24	12			
	S-2	2-4	12-10-8-5	24	0			
S-3	4-6	8-6-4-8	24	24				
10							BOH @ 6 Ft	Bottom of Hole at 6 ft.
15								
20								
25								


**Remarks:**  
  
 Bottom of hole at 6 feet – stopped in fill

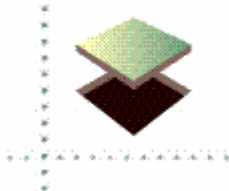


		<b>Underground Engineering LLC</b>						
		<b>-Test Boring Log-</b>			Boring No.	B-104		
		413-421 Second Street Everett, MA				Sheet 1 of 3		
					File No.	O4-002		
			Reviewer	JMH				
Boring Company	Able Soils-Earth Tech, Inc.			Boring Location	See plan			
Foreman	Steve Perry			Ground Elev.	NA			
Observer	James Hardin			Date Start - End	July 14, 2004			
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches				<b>Ground Water Readings (See Notes)</b>				
				Date	Time	Depth to Bottom	Depth to Water	Rem
<b>Sample Data</b>								
<div style="display: flex; align-items: center;"> <div style="width: 20px; text-align: center; margin-right: 5px;">5</div> <div style="width: 20px; text-align: center; margin-right: 5px;">10</div> <div style="width: 20px; text-align: center; margin-right: 5px;">15</div> <div style="width: 20px; text-align: center; margin-right: 5px;">20</div> <div style="width: 20px; text-align: center; margin-right: 5px;">25</div> </div>	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Strata Change	Sample Description  -Asphalt -Black Sand and Gravel, Some Silt -Grey Brown Black Sand and Gravel, Little Silt
	S-1	0-2	20-15-13-52	24	1			
	S-2	2-4	12-10-8-10	24	12			
	S-3	4-6	2-4-12-18	24	12			
	S-4	6-8	6-7-5-32	24	6			
						1		
	S-5	10-12	4-1-1-1	24	24			
	S-6	15-17	5-7-30-72	24	1.5			
	S-7	20-22	4-4-5-14	24	6	2*		
						17		
						27		
						31		
						36		
	S-8	25-27	3-3-6-9	24	24	41		
						36		
						33		
						34		
						31		

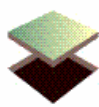
**Remarks:**

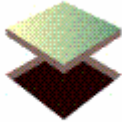
- At about 9 feet the auger encountered metal packing wire, which wrapped around the auger and stopped work while it was cleared.
- Switched to casing at 22 feet driven by 300 lb hammer falling 2 feet. Column indicates casing blows per foot.




		<b>Underground Engineering LLC</b>								
		<b>-Test Boring Log-</b>			Boring No.	B-104				
		413-421 Second Street Everett, MA				Sheet 2 of 3				
					File No.	04-002				
			Reviewer	JMH						
Boring Company	Able Soils-Earth Tech, Inc.			Boring Location						
Foreman	Steve Perry			Ground Elev.						
Observer	James Hardin			Date Start - End	July 14, 2004					
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches				<b>Ground Water Readings (See Notes)</b>						
				Date	Time	Depth to Bottom	Depth to Water	Rem		
<b>Sample Data</b>							<b>Strata Change</b>	<b>Sample Description</b>		
	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem				
35	S-9	30-32	3-4-5-6	24	24	34	Boston Blue Clay			
						34				
						34				
						35				
						36				
						72				
						54				
						50				
						47				
						44				
40	S-10	40-42	1 for 24"	24	12	45				
						44				
						50				
						45				
						44				
45	S-11	45-47	1-2-2-3	24	24	47				
						42				
						42				
						43				
						52				
50	S-12	50-52	1-2-3-4	24	24	49				
						45				
						43				
						45				
						46				
55	S-13	55-57	1-1-2-5	24	24	53				
						58				
						60				
						49				
						53				

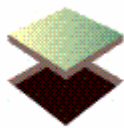
**Remarks:**  
 Remarks Column indicates casing blows per foot



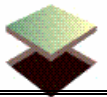
		<b>Underground Engineering LLC</b>						
		<b>-Test Boring Log-</b>			Boring No.	B-104		
		413-421 Second Street Everett, MA				Sheet 3 of 3		
					File No.	O4-002		
			Reviewer	JMH				
Boring Company	Able Soils-Earth Tech, Inc.			Boring Location				
Foreman	Steve Perry			Ground Elev.				
Observer	James Hardin			Date Start - End	July 14, 2004			
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches				<b>Ground Water Readings (See Notes)</b>				
				Date	Time	Depth to Bottom	Depth to Water	Rem
<b>Sample Data</b>								
<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">65</div> <div style="border-left: 2px solid black; height: 100px; margin-left: 5px;"></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">70</div> <div style="border-left: 2px solid black; height: 100px; margin-left: 5px;"></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">75</div> <div style="border-left: 2px solid black; height: 100px; margin-left: 5px;"></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">80</div> <div style="border-left: 2px solid black; height: 100px; margin-left: 5px;"></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">85</div> <div style="border-left: 2px solid black; height: 100px; margin-left: 5px;"></div> </div>	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Strata Change	Sample Description
	S-14	60-62	4-6-9-9	24	24	66		
						66		
						72		
						101		
						212		
	S-15	65-67	145-150	24	24	75		
			188-232			57		
						57		
						48		
						52		
	S-16	70-72	9-13-15-16	24	24	65		
						60		
						60		
						80		
						145		
	S-17	75-77	39-38-39-42	24	24			
	S-18	78-80	27-59-66-61	24	12			

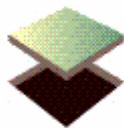
**Remarks:**  
 Remarks column indicates casing blows per foot



		<b>Underground Engineering LLC</b>							
		-Test Boring Log-			Boring No.	B-201-OW			
		413-421 Second Street Everett, MA				Sheet 1 of 1			
					File No.	04002			
			Reviewer	JMH					
Boring Company		Carr Dee Corp.			Boring Location		4 feet SE of Stake – see plan		
Foreman		Rene DeSimone			Ground Elev.		96.8 (est. from Topo)		
Observer		Jeffrey M. Hardin			Date Start - End		April 19, 2005		
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches					<b>Ground Water Readings (See Notes)</b>				
					Date	Time	Depth to Bottom	Depth to Water	Rem
					–	–	–	4 ft	1
<b>Sample Data</b>					Strata Change		Sample Description		
No.	Depth	Blows per 6 in.	Pen.	Rec.					Rem
5	S-1	0 - 2	2 - 5 - 7 - 8	24	11		---GW  Fill	-Bl. And Br. Sand and Silt, Some Gravel, Trace Organics, Cinders, Rock Fragments  -Grey Clayey Silt, Some Sand  -Grey Clayey Silt Trace Brick, Trace Fine Gravel	
	S-2	2 - 4	5 - 4 - 3 - 4	24	14				
	S-3	4 - 6	2 - 3 - 2 - 1	24	6				
10							Peat	Brown Fibrous Peat	
	S-4	10-12	1 - 1 - 1 - 1	24	14				
15							Clay	Very Stiff Yellow Clay	
	S-5	15-17	3 - 5 - 12-19	24	24				
20							BOH – 17'	Bottom of hole at 17 ft.	
25									

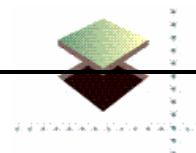
**Remarks:**  
 1. Noted during drilling  
 2. End Cap, 10 feet slotted, 5 feet riser with 11 feet of sand filter, 1-foot bentonite seal, 3 feet of cuttings and cemented roadway box.



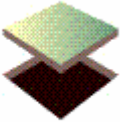
		<b>Underground Engineering LLC</b>							
		-Test Boring Log-			Boring No.	B-202			
		413-421 Second Street Everett, MA				Sheet 1 of 1			
					File No.	04002			
			Reviewer	JMH					
Boring Company		Carr Dee Corp.			Boring Location		On Stake – see plan		
Foreman		Rene DeSimone			Ground Elev.		97.0 (est. from Topo)		
Observer		Jeffrey M. Hardin			Date Start - End		April 20, 2005		
Sampling Protocol					Ground Water Readings (See Notes)				
Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches					Date	Time	Depth to Bottom	Depth to Water	Rem
					–	–	–	4'	1
Sample Data					Strata Change		Sample Description		
<div style="display: flex; align-items: center;"> <div style="width: 20px; text-align: center; margin-right: 5px;">5</div> <div style="width: 20px; text-align: center; margin-right: 5px;">10</div> <div style="width: 20px; text-align: center; margin-right: 5px;">15</div> <div style="width: 20px; text-align: center; margin-right: 5px;">20</div> <div style="width: 20px; text-align: center; margin-right: 5px;">25</div> <div style="width: 20px; text-align: center; margin-right: 5px;">30</div> </div>	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Fill	-Asphalt -Black Sand and Gravel, Some Silt -Grey Brown Black Sand and Gravel, Little Silt -Wood	
	S-1	0.5-2.5	4 – 5 – 6 – 6	24	12				
	S-2	2.5-4.5	4 – 4 – 1 – 2	24	8				
	S-3	4.5-6.5	2 – 3 – 3 – 4	24	2				
		S-4	10-12	1 – 1 – 1 – 1	24	20		Peat	-Brown Fibrous Peat
		S-5	15-17	3 – 5 – 12-19	24	20		Clay	-Very Stiff Yellow Clay -Stiff Yellow Clay -Med Stiff Yellow Clay
		S-6	20 - 22	5 – 6 – 9 – 10	24	22		BOH – 32'	-Medium Boston Blue Clay Bottom of hole at 32 ft.
	S-7	25 - 27	4 – 3 – 5 – 5	24	24				
	S-8	30-32	1 – 2 – 3 – 3	24	24				

**Remarks:**

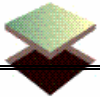
1. Noted during drilling
2. No Monitoring Well installed.
3. Boring accomplished using 2-1/4" Hollow Stem Augers.

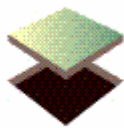




		<b>Underground Engineering LLC</b>							
		-Test Boring Log-			Boring No.	B-203-OW			
		413-421 Second Street Everett, MA				Sheet 1 of 1			
					File No.	04002			
			Reviewer	JMH					
Boring Company		Carr Dee Corp.			Boring Location		5 feet S of Stake – see plan		
Foreman		Rene DeSimone			Ground Elev.		97.5 (est. from Topo)		
Observer		Jeffrey M. Hardin			Date Start - End		April 19, 2005		
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches					<b>Ground Water Readings (See Notes)</b>				
					Date	Time	Depth to Bottom	Depth to Water	Rem
					–	–	–	3'	1
<b>Sample Data</b>					Strata Change		Sample Description		
No.	Depth	Blows per 6 in.	Pen.	Rec.					Rem
5	S-1	0 - 2	3 - 3 - 4 - 5	24	14		Fill	-Grey and Black Sand and Fine Gravel, Little Silt -Brown Grey Orange Mottled Silty Sand, Trace Fine Gravel  - No Recovery	
	S-2	2 - 4	3 - 2 - 1 - 2	24	14				
	S-3	4 - 6	2 - 6 - 1/12"	24	0				
10							Peat	- No Recovery   Brown Fibrous Peat	
	S-4	6 - 8	1/12" - 1 - 1	24	0				
	S-5	10-12	1/12" - 1 - 2	24	13/1				
15							Clay	Stiff Yellow Clay	
	S-6	15-17	5 - 10-15 -24	24	18				
20							BOH - 17'	Bottom of Hole at 17 ft.	
25									

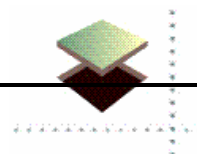
**Remarks:**  
 1. Noted during drilling  
 2. End Cap, 10 feet slotted, 5 feet riser with 11 feet of sand filter, 1-foot bentonite seal, 3 feet of cuttings and cemented roadway box.

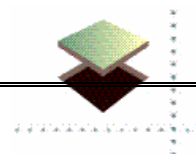


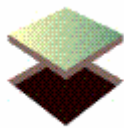
		<b>Underground Engineering LLC</b>							
		-Test Boring Log-			Boring No.	B-204			
		413-421 Second Street Everett, MA				Sheet 1 of 1			
					File No.	04002			
			Reviewer	JMH					
Boring Company		Carr Dee Corp.			Boring Location		2 feet SE of Stake – see plan		
Foreman		Rene DeSimone			Ground Elev.		97.5 (est. from Topo)		
Observer		Jeffrey M. Hardin			Date Start - End		April 20, 2005		
Sampling Protocol					Ground Water Readings (See Notes)				
Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches					Date	Time	Depth to Bottom	Depth to Water	Rem
					–	–	–		I
Sample Data					Strata Change		Sample Description		
5	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Fill	-Black Silty Sand, Little Fine Gravel, Brick -Brown F-M Sand, Little Silt, Trace F. Gravel -Brown Black Silt and Sand, Little Coarse Sand and Fine Gravel	
	S-1	0 - 2	3 - 5 - 4 - 7	24	12				
	S-2	2 - 4	5 - 3 - 2 - 2	24	15				
	S-3	4 - 6	2 - 3 - 2 - 2	24	6				
10	S-4	10-12	2 - 2 - 2 - 2	24	24		Peat	Brown Fibrous Peat	
15	S-5	15- 16	3 - 3	12	10		Clay	Brown Fibrous Peat  Stiff Yellow Clay	
	S-5A	16- 17	4 - 6	12	10				
	S-6	17- 19	8 - 12- 11- 18	24	17				
20							BOH - 19'	Bottom of Hole at 19 ft.	
25									

**Remarks:**

- Noted during drilling.
- No Monitoring Well installed.
- Boring accomplished using 2-1/4" Hollow Stem Augers.

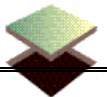


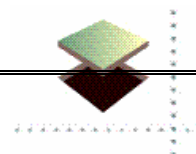


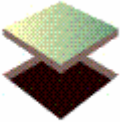
		<b>Underground Engineering LLC</b>							
		-Test Boring Log-			Boring No.	B-206			
		413-421 Second Street Everett, MA				Sheet 1 of 1			
					File No.	04002			
			Reviewer	JMH					
Boring Company		Carr Dee Corp.			Boring Location		12 feet south of Stake – see plan		
Foreman		Rene DeSimone			Ground Elev.		99.0 (est. from Topo)		
Observer		Jeffrey M. Hardin			Date Start - End		April 20, 2005		
<b>Sampling Protocol</b> Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches					<b>Ground Water Readings (See Notes)</b>				
					Date	Time	Depth to Bottom	Depth to Water	Rem
					-	-	-	7'	1
<b>Sample Data</b>					<b>Strata Change</b>		<b>Sample Description</b>		
5	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Fill	-Asphalt -Grey Brown Silt and Sand, Trace Fine Gravel -Black Sand and Fine Gravel, Little Silt, Cinders, Brick Fragments Brown and Black Sand and Fine Gravel, Little Silt	
	S-1	0.5-2.5	7 – 7 – 9 – 12	24	8				
	S-2	2.5-4.5	4 – 3 – 3 – 4	24	10				
	S-3	4.5-6.5	5 – 8 – 11 – 14	24	6				
10	S-4	10-12	2 – 15 – 34 – 11	24	14		Wood		
15	S-5	15-17	3 – 4 – 4 – 4	24	3		Peat	Brown Fibrous Peat	
20	S-6	17 – 19	4 – 5 – 7 – 18	24	12		Clay	Stiff Yellow Clay	
25	BOH – 19'						Bottom of Hole at 19 ft.		

**Remarks:**

- Noted during drilling.
- No Monitoring Well installed.
- Boring accomplished using 2-1/4" Hollow Stem Augers.

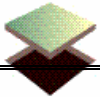




		<b>Underground Engineering LLC</b>							
		-Test Boring Log-			Boring No.	B-208			
		413-421 Second Street Everett, MA				Sheet 1 of 1			
					File No.	04002			
			Reviewer	JMH					
Boring Company		Carr Dee Corp.			Boring Location		On Stake - see plan		
Foreman		Rene DeSimone			Ground Elev.		98.6 (est. from Topo)		
Observer		Jeffrey M. Hardin			Date Start - End		April 20, 2005		
Sampling Protocol					Ground Water Readings (See Notes)				
Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches					Date	Time	Depth to Bottom	Depth to Water	Rem
					-	-	-	7'	1
Sample Data					Strata Change		Sample Description		
5	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Fill	-Asphalt -Brown and Black Sand and Silt, Little Fine Gravel -Orange Brown Sand and Fine Gravel, Trace Cinders, Brick, etc. -Grey Blue Clay (fill)	
	S-1	0.5-2.5	6 - 7 - 6 - 8	24	10				
	S-2	2.5-4.5	8- 11- 24- 20	24	8				
	S-3	4.5-6.5	5 - 5- 10- 18	24	11				
10	S-4	10-12	1 - 2 - 2 - 2	24	18		Peat	Brown Fibrous Peat	
15	S-5	15-17	1 - 2 - 2 - 3	24	19		Clay	Orange Brown Fibrous Peat	
20	S-6	17 - 19	6- 14- 13- 17	24	19		BOH - 19'	Bottom of Hole at 19 ft.	
25									

**Remarks:**

- Noted during drilling.
- No Monitoring Well installed.
- Boring accomplished using 2-1/4" Hollow Stem Augers.

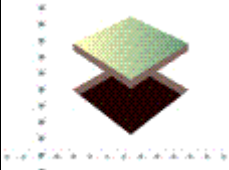




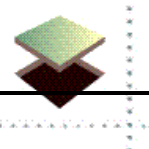






		<b>Underground Engineering LLC</b>				
		-Well Installation Log-			Well	B-304-OW
		Second Street Everett, MA			File No.	04002
			Reviewer	JMH	Sheet 1 of 1	
Boring Company	Legacy Construction Corp.			Well Location	See Plan	
Foreman	Steve			Ground Elev.	NA	
Observer	Jeffrey M. Hardin			Date Start - End	March 10, 2008	
Sampling Protocol				Ground Water Readings (See Notes)		
Unless otherwise noted, borings were accomplished using 4 inch diameter hollow stem augers. Samples were recovered using a 2-inch I.D. split spoon sampler, driven by blows of a 140 lb. hammer falling 30 inches				Date	Time	Depth to Bottom
				Depth to Water	Rem	
Sample Data				Strata Change	Sample Description	
No.	Depth	Blows per 6 in.	Pen.			
5						
10						
15						
20						
25						

Remarks:  
 End Cap, 10 feet slotted, 5 feet solid riser with 12.5 feet of sand filter, 2 feet of cuttings, 2-foot bentonite seal and cemented roadway box.



## TEST PIT EXCAVATIONS

413-421 Second Street

Everett, MA

*Page 1 of 3*

- Date of Excavation: June 2, 2005, 7:30 a.m. to 11:40 a.m.
- Contractor: J. Marchese & Sons, 69 Norman Street, Everett, MA
- Observer: Jeffrey M. Hardin
- Present on site: Richard Glanz, Scott Karpinski
- Except as noted, each test pit was about 2.5 feet wide (the width of the bucket), six to eight feet long and ended in fill.

### Test Pit TP-1 (H<sub>2</sub>O entering hole at 4 feet)

From Ground Surface to depth of 1.3 feet

Brown Loamy Sand and Gravel, Some Silt (Fill)

From 1.3 feet to 2 feet

Rusty Brown F-M Sand, Some C. Gravel, and possible coal fragments (Fill)

From 2 feet to 4.5 feet

Brown mottled F-M Sand and Gravel (Fill)

### Test Pit TP-2 (H<sub>2</sub>O entering hole at 3.0 feet)

From Ground Surface to depth of 1.3 foot

Brown Loamy Sand and Gravel, Some Silt (Fill)

From 1.3 feet to 2.3 feet

Rusty Brown F-M Sand, Some C. Gravel, and possible coal fragments (Fill)

From 2.3 feet to 3.3 feet

Brown mottled F-M Sand and Gravel intermixed with white sand and silt size material, possibly plaster (Fill)

### Test Pit TP-3 (H<sub>2</sub>O entering hole at 5.5 feet)

From Ground Surface to depth of 1 foot

Brown Loamy Sand and Gravel, Some Silt, roots, trace brick (Fill)

From 1 foot to 5.5 feet

Light brown Sand and Gravel, Some Silt, one 6-inch and one 2-foot boulder, little scrap metal, bottles, brick and cans (Fill)

### Test Pit TP-4 (no H<sub>2</sub>O entering hole)

From Ground Surface to depth of 2 feet

Black, Brown and grey mixed Sand and Gravel, brick fragments (Fill)

From 2 feet to 4 feet

Grey Fine to Medium Sand, Little Silt (Fill)

From 4 feet to 4.5 feet

Brown mottled F-M Sand and Gravel (Fill)

## **TEST PIT EXCAVATIONS**

413-421 Second Street

Everett, MA

*Page 2 of 3*

Test Pit TP-5 (H<sub>2</sub>O entering hole at 3 feet)

From Ground Surface to depth of 1 foot

Brown Loamy Sand and Gravel, Some Silt (Fill)

From 1 foot to 2 feet

Brown Sand and Gravel, Some Silt, little scrap metal, bottles, brick and cans (Fill)

From 2 feet to 3.9 feet

Brown mottled F-M Sand and Gravel (Fill)

Test Pit TP-6 (no H<sub>2</sub>O entering hole)

From Ground Surface to depth of 3.5 feet

Brown Sand and Gravel, brick fragments (Fill)

From 3.5 feet to 4.5 feet

Brown mottled F-M Sand and Gravel (Fill)

Test Pit TP-7 (no H<sub>2</sub>O entering hole)

From Ground Surface to depth of 1.8 feet

Brown Sand and Gravel, brick fragments (Fill)

From 1.8 feet to 3.0 feet

Grey Fine to Medium Sand, Little Silt (Fill)

From 3.0 feet to 3.5 feet

Brown mottled F-M Sand and Gravel (Fill)

Test Pit TP-8 (no H<sub>2</sub>O entering hole)

From Ground Surface to depth of 1 foot

Brown Loamy Sand and Gravel, Some Silt and fine roots (Fill)

From 1 foot to 4 feet

Brown F-C Sand and Gravel, Trace Silt (Fill)

Test Pit TP-9 (H<sub>2</sub>O entering hole at 4.0 feet)

From Ground Surface to depth of 15 inches

Brown Loamy Sand and Gravel, Some Silt, trace brick and other debris (Fill)

From 15 inches to 4.5 feet

Brown mottled F-M Sand and Gravel (Fill)

## **TEST PIT EXCAVATIONS**

413-421 Second Street

Everett, MA

*Page 3 of 3*

Test Pit TP-10 (no H<sub>2</sub>O entering hole)

From Ground Surface to depth of 3 feet

Brown Loamy Sand and Gravel, Some Silt, Brick, Trace metal (Fill)

Test Pit TP-11 (no H<sub>2</sub>O entering hole)

From Ground Surface to depth of 1 foot

Brown Loamy Sand and Gravel, Some Silt and fine roots (Fill)

From 1 foot to 4 feet

Brown F-C Sand and Gravel, Trace Silt (Fill)

Test Pit TP-12 (no H<sub>2</sub>O entering hole)

From Ground Surface to depth of 1 foot

Brown Loamy Sand and Gravel, Some Silt and fine roots (Fill)

From 1 foot to 4 feet

Brown F-C Sand and Gravel, Trace Silt (Fill)

Test Pit TP-13 (H<sub>2</sub>O entering hole at 4.5 feet)

From Ground Surface to depth of 1 foot

Brown Loamy Sand and Gravel, Some Silt (Fill)

From 1 foot to 2.5 feet

Grey Fine to Medium Sand, Little Silt

From 2.5 feet to 4.5 feet

Brown mottled F-M Sand and Gravel, little Silt (Fill)

## **TEST PIT EXCAVATIONS**

413-421 Second Street

Everett, MA

Test Pits TP-201, 202 & 203

*Page 1 of 7*

- Date of Excavation: November 18, 2005
- Contractor: GTA Landscaping, Everett, MA
- Observer: Jeffrey M. Hardin
- Present on site: Richard Glanz
- Test Pits TP-201, TP-202 & TP-203, No Logs prepared, Photos on following Pages document Test Pits

## TEST PIT EXCAVATIONS

413-421 Second Street

Everett, MA

*Page 2 of 7*



Test Pit TP-201

## TEST PIT EXCAVATIONS

413-421 Second Street

Everett, MA

*Page 3 of 7*



Test Pit TP-201



## TEST PIT EXCAVATIONS

413-421 Second Street

Everett, MA

*Page 4 of 7*



Test Pit TP-201

## TEST PIT EXCAVATIONS

413-421 Second Street

Everett, MA

*Page 5 of 7*



Test Pit TP-202

## TEST PIT EXCAVATIONS

413-421 Second Street

Everett, MA

*Page 6 of 7*



Test Pit TP-203



## TEST PIT EXCAVATIONS

413-421 Second Street

Everett, MA

*Page 7 of 7*



Test Pit TP-203

## APPENDIX C

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA: MA092 NH: 2028 RI: 236  
CT: PH0579 OK: 9928 NC: 615  
NY (NELAC): 11063

**ANALYTICAL DATA REPORT**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffery Hardin

Project No.: 08.0018237.00  
Work Order No.: 0406-00188  
Date Received: 6/24/04  
Date Reported: 7/07/04

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
6/23/2004	Solid	0406-00188 001	GRAB-1
6/23/2004	Solid	0406-00188 002	GRAB-2
6/23/2004	Solid	0406-00188 003	GRAB-3
6/23/2004	Solid	0406-00188 004	GRAB-4
6/23/2004	Solid	0406-00188 005	GRAB-5
6/23/2004	Solid	0406-00188 006	GRAB-6

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/24/04  
Date Reported: 7/07/04  
Work Order No.: 0406-00188

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### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 06/23/04 via    GZA courier,    EC,    FEDEX, or   X   hand delivered. The temperature of the   x   temperature blank/    cooler air, was 10.3 degrees C. The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

#### 2. EPA Method 6010/7471 - Metals

Attach QC 6010 06/25/04 - Solid  
Attach QC Mercury 06/28/04 - Solid

#### 3. EPA Method 8270 - SVOCs

Attach QC 8270 06/28/04 - Solid

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/24/04  
Date Reported: 7/07/04  
Work Order No.: 0406-00188

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Data Authorized By:



% R = % Recovery  
DF = Dilution Factor  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

### Laboratory Identification Numbers:

MA: MA092      NH: 2028  
CT: PH0579      RI: 236  
NC: 615      NY (NELAC): 11063

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.



GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/24/04  
Date Reported: 7/07/04  
Work Order No.: 0406-00188

Sample ID: GRAB-1  
Sample Date: 6/23/2004

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	6/30/04
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Fluorene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Phenanthrene	EPA 8270	3100	ug/kg	CMG	6/30/04
Anthracene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Fluoranthene	EPA 8270	530	ug/kg	CMG	6/30/04
Pyrene	EPA 8270	550	ug/kg	CMG	6/30/04
Benzo [a] Anthracene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Chrysene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Benzo [b] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Benzo [k] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Benzo [a] Pyrene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	6/30/04
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	48.6	% R	CMG	6/30/04
***2-Fluorobiphenyl	EPA 8270	70.5	% R	CMG	6/30/04
***P-Terphenyl-D14	EPA 8270	72.3	% R	CMG	6/30/04
Extraction		1.0	DF	ARL	6/28/04
PRIORITY POLLUTANT METALS					
Beryllium	EPA 6010	< 0.456	mg/Kg	AJY	6/25/04
Silver	EPA 6010	34.2	mg/Kg	AJY	6/25/04
Arsenic	EPA 6010	30.7	mg/Kg	AJY	6/25/04
Cadmium	EPA 6010	96.5	mg/Kg	AJY	6/25/04
Chromium	EPA 6010	7.61	mg/Kg	AJY	6/25/04
Copper	EPA 6010	6950	mg/Kg	AJY	6/25/04
Mercury	EPA 7471A	8.84	mg/Kg	NH	6/30/04
Nickel	EPA 6010	246	mg/Kg	AJY	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Work Order No.: 0406-00188

Sample ID: GRAB-1  
Sample Date: 6/23/2004

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
Lead	EPA 6010	668000	mg/Kg	AJY	6/28/04
Antimony	EPA 6010	1220	mg/Kg	AJY	6/25/04
Selenium	EPA 6010	<2.28	mg/Kg	AJY	6/25/04
Thallium	EPA 6010	31.4	mg/Kg	AJY	6/25/04
Zinc	EPA 6010	1330	mg/Kg	AJY	6/25/04
PERCENT SOLID		98.8	%	TAJ	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Work Order No.: 0406-00188

Sample ID: GRAB-2  
Sample Date: 6/23/2004

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
PRIORITY POLLUTANT METALS					
Beryllium	EPA 6010	<0.489	mg/Kg	AJY	6/25/04
Silver	EPA 6010	267	mg/Kg	AJY	6/25/04
Arsenic	EPA 6010	17.9	mg/Kg	AJY	6/25/04
Cadmium	EPA 6010	22.5	mg/Kg	AJY	6/25/04
Chromium	EPA 6010	156	mg/Kg	AJY	6/25/04
Copper	EPA 6010	8770	mg/Kg	AJY	6/25/04
Mercury	EPA 7471A	1.26	mg/Kg	NH	6/30/04
Nickel	EPA 6010	45.5	mg/Kg	AJY	6/25/04
Lead	EPA 6010	9320	mg/Kg	AJY	6/28/04
Antimony	EPA 6010	10.8	mg/Kg	AJY	6/25/04
Selenium	EPA 6010	<2.44	mg/Kg	AJY	6/25/04
Thallium	EPA 6010	<2.44	mg/Kg	AJY	6/25/04
Zinc	EPA 6010	1950	mg/Kg	AJY	6/25/04
PERCENT SOLID		98.4	%	TAJ	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0406-00188

Sample ID: GRAB-3  
 Sample Date: 6/23/2004

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	4500	ug/kg	CMG	7/02/04
2-Methylnaphthalene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Acenaphthylene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Acenaphthene	EPA 8270	3300	ug/kg	CMG	7/02/04
Fluorene	EPA 8270	7400	ug/kg	CMG	7/02/04
Phenanthrene	EPA 8270	120000	ug/kg	CMG	7/02/04
Anthracene	EPA 8270	< 6600	ug/kg	CMG	7/02/04
Fluoranthene	EPA 8270	9400	ug/kg	CMG	7/02/04
Pyrene	EPA 8270	16000	ug/kg	CMG	7/02/04
Benzo [a] Anthracene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Chrysene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Benzo [b] Fluoranthene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Benzo [k] Fluoranthene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Benzo [a] Pyrene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Dibenzo [a,h] Anthracene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Benzo [g,h,i] Perylene	EPA 8270	< 3300	ug/kg	CMG	7/02/04
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	48.3	% R	CMG	7/02/04
***2-Fluorobiphenyl	EPA 8270	86.4	% R	CMG	7/02/04
***P-Terphenyl-D14	EPA 8270	119	% R	CMG	7/02/04
Extraction		1.0	DF	ARL	6/28/04
PRIORITY POLLUTANT METALS					
Beryllium	EPA 6010	< 0.508	mg/Kg	AJY	6/25/04
Silver	EPA 6010	11.8	mg/Kg	AJY	6/25/04
Arsenic	EPA 6010	31.1	mg/Kg	AJY	6/25/04
Cadmium	EPA 6010	137	mg/Kg	AJY	6/25/04
Chromium	EPA 6010	90.2	mg/Kg	AJY	6/25/04
Copper	EPA 6010	5250	mg/Kg	AJY	6/25/04
Mercury	EPA 7471A	12.0	mg/Kg	NH	6/30/04
Nickel	EPA 6010	258	mg/Kg	AJY	6/25/04
Lead	EPA 6010	247000	mg/Kg	AJY	6/28/04
Antimony	EPA 6010	351	mg/Kg	AJY	6/25/04
Selenium	EPA 6010	< 2.54	mg/Kg	AJY	6/25/04
Thallium	EPA 6010	7.77	mg/Kg	AJY	6/25/04
Zinc	EPA 6010	5440	mg/Kg	AJY	6/28/04
PERCENT SOLID		91.8	%	TAJ	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0406-00188

Sample ID: GRAB-4  
 Sample Date: 6/23/2004

Sample No.: 004

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	710	ug/kg	CMG	6/30/04
2-Methylnaphthalene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Acenaphthylene	EPA 8270	1900	ug/kg	CMG	6/30/04
Acenaphthene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Fluorene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Phenanthrene	EPA 8270	3500	ug/kg	CMG	6/30/04
Anthracene	EPA 8270	1500	ug/kg	CMG	6/30/04
Fluoranthene	EPA 8270	4400	ug/kg	CMG	6/30/04
Pyrene	EPA 8270	4400	ug/kg	CMG	6/30/04
Benzo [a] Anthracene	EPA 8270	2600	ug/kg	CMG	6/30/04
Chrysene	EPA 8270	2700	ug/kg	CMG	6/30/04
Benzo [b] Fluoranthene	EPA 8270	2300	ug/kg	CMG	6/30/04
Benzo [k] Fluoranthene	EPA 8270	2200	ug/kg	CMG	6/30/04
Benzo [a] Pyrene	EPA 8270	2600	ug/kg	CMG	6/30/04
Indeno [1,2,3-cd] Pyrene	EPA 8270	1100	ug/kg	CMG	6/30/04
Dibenzo [a,h] Anthracene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Benzo [g,h,i] Perylene	EPA 8270	1000	ug/kg	CMG	6/30/04
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	47.9	% R	CMG	6/30/04
***2-Fluorobiphenyl	EPA 8270	85.3	% R	CMG	6/30/04
***P-Terphenyl-D14	EPA 8270	88.0	% R	CMG	6/30/04
Extraction		1.0	DF	ARL	6/28/04
PRIORITY POLLUTANT METALS					
Beryllium	EPA 6010	<0.538	mg/Kg	AJY	6/25/04
Silver	EPA 6010	<0.538	mg/Kg	AJY	6/25/04
Arsenic	EPA 6010	4.57	mg/Kg	AJY	6/25/04
Cadmium	EPA 6010	3.16	mg/Kg	AJY	6/25/04
Chromium	EPA 6010	26.4	mg/Kg	AJY	6/25/04
Copper	EPA 6010	300	mg/Kg	AJY	6/25/04
Mercury	EPA 7471A	0.270	mg/Kg	NH	6/30/04
Nickel	EPA 6010	17.3	mg/Kg	AJY	6/25/04
Lead	EPA 6010	1810	mg/Kg	AJY	6/28/04
Antimony	EPA 6010	5.94	mg/Kg	AJY	6/25/04
Selenium	EPA 6010	<2.69	mg/Kg	AJY	6/25/04
Thallium	EPA 6010	<2.69	mg/Kg	AJY	6/25/04
Zinc	EPA 6010	2600	mg/Kg	AJY	6/25/04
PERCENT SOLID		91.5	%	TAJ	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0406-00188

Sample ID: GRAB-5  
 Sample Date: 6/23/2004

Sample No.: 005

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 660	ug/kg	CMG	6/30/04
2-Methylnaphthalene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Acenaphthylene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Acenaphthene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Fluorene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Phenanthrene	EPA 8270	2400	ug/kg	CMG	6/30/04
Anthracene	EPA 8270	780	ug/kg	CMG	6/30/04
Fluoranthene	EPA 8270	3500	ug/kg	CMG	6/30/04
Pyrene	EPA 8270	3600	ug/kg	CMG	6/30/04
Benzo [a] Anthracene	EPA 8270	1900	ug/kg	CMG	6/30/04
Chrysene	EPA 8270	2100	ug/kg	CMG	6/30/04
Benzo [b] Fluoranthene	EPA 8270	1600	ug/kg	CMG	6/30/04
Benzo [k] Fluoranthene	EPA 8270	1600	ug/kg	CMG	6/30/04
Benzo [a] Pyrene	EPA 8270	1700	ug/kg	CMG	6/30/04
Indeno [1,2,3-cd] Pyrene	EPA 8270	760	ug/kg	CMG	6/30/04
Dibenzo [a,h] Anthracene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Benzo [g,h,i] Perylene	EPA 8270	740	ug/kg	CMG	6/30/04
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	51.5	% R	CMG	6/30/04
***2-Fluorobiphenyl	EPA 8270	94.0	% R	CMG	6/30/04
***P-Terphenyl-D14	EPA 8270	88.6	% R	CMG	6/30/04
Extraction		1.0	DF	ARL	6/28/04
PRIORITY POLLUTANT METALS					
Beryllium	EPA 6010	< 0.466	mg/Kg	AJY	6/25/04
Silver	EPA 6010	3.48	mg/Kg	AJY	6/25/04
Arsenic	EPA 6010	17.8	mg/Kg	AJY	6/25/04
Cadmium	EPA 6010	20.3	mg/Kg	AJY	6/25/04
Chromium	EPA 6010	38.8	mg/Kg	AJY	6/25/04
Copper	EPA 6010	480	mg/Kg	AJY	6/25/04
Mercury	EPA 7471A	2.03	mg/Kg	NH	6/30/04
Nickel	EPA 6010	34.3	mg/Kg	AJY	6/25/04
Lead	EPA 6010	15600	mg/Kg	AJY	6/28/04
Antimony	EPA 6010	29.9	mg/Kg	AJY	6/25/04
Selenium	EPA 6010	< 2.33	mg/Kg	AJY	6/25/04
Thallium	EPA 6010	< 2.33	mg/Kg	AJY	6/25/04
Zinc	EPA 6010	1420	mg/Kg	AJY	6/25/04
PERCENT SOLID		93.5	%	TAJ	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0406-00188

Sample ID: GRAB-6  
Sample Date: 6/23/2004

Sample No.: 006

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 660	ug/kg	CMG	6/30/04
2-Methylnaphthalene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Acenaphthylene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Acenaphthene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Fluorene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Phenanthrene	EPA 8270	2100	ug/kg	CMG	6/30/04
Anthracene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Fluoranthene	EPA 8270	3100	ug/kg	CMG	6/30/04
Pyrene	EPA 8270	2800	ug/kg	CMG	6/30/04
Benzo [a] Anthracene	EPA 8270	1600	ug/kg	CMG	6/30/04
Chrysene	EPA 8270	1900	ug/kg	CMG	6/30/04
Benzo [b] Fluoranthene	EPA 8270	1400	ug/kg	CMG	6/30/04
Benzo [k] Fluoranthene	EPA 8270	1300	ug/kg	CMG	6/30/04
Benzo [a] Pyrene	EPA 8270	1200	ug/kg	CMG	6/30/04
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Dibenzo [a,h] Anthracene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Benzo [g,h,i] Perylene	EPA 8270	< 660	ug/kg	CMG	6/30/04
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	50.3	% R	CMG	6/30/04
***2-Fluorobiphenyl	EPA 8270	97.0	% R	CMG	6/30/04
***P-Terphenyl-D14	EPA 8270	91.3	% R	CMG	6/30/04
Extraction		1.0	DF	ARL	6/28/04
PRIORITY POLLUTANT METALS					
Beryllium	EPA 6010	<0.497	mg/Kg	AJY	6/25/04
Silver	EPA 6010	4.35	mg/Kg	AJY	6/25/04
Arsenic	EPA 6010	10.7	mg/Kg	AJY	6/25/04
Cadmium	EPA 6010	7.80	mg/Kg	AJY	6/25/04
Chromium	EPA 6010	25.4	mg/Kg	AJY	6/25/04
Copper	EPA 6010	1060	mg/Kg	AJY	6/25/04
Mercury	EPA 7471A	6.91	mg/Kg	NH	6/30/04
Nickel	EPA 6010	38.7	mg/Kg	AJY	6/25/04
Lead	EPA 6010	4130	mg/Kg	AJY	6/28/04
Antimony	EPA 6010	40.0	mg/Kg	AJY	6/25/04
Selenium	EPA 6010	2.57	mg/Kg	AJY	6/25/04
Thallium	EPA 6010	<2.48	mg/Kg	AJY	6/25/04
Zinc	EPA 6010	1130	mg/Kg	AJY	6/25/04
PERCENT SOLID		90.4	%	TAJ	6/25/04

Spike Value = 20000 ppb

Extraction Date: 06/28/04

MB File Name: K6090

Analysis Date: 06/29/04

LCS File Name: K6091

Target Compounds:	Method Blank		Laboratory Control Sample		
	Result	Reporting Limit	% Recovery	Limits	Pass/Fail
n-nitrosodimethylamine	ND	330	54.7	40 - 140	ok
pyridine	ND	3300	130	40 - 140	ok
phenol	ND	330	79.1	40 - 140	ok
bis(2-chloroethyl)ether	ND	330	57.7	40 - 140	ok
2-chlorophenol	ND	330	85.4	40 - 140	ok
1,3-dichlorobenzene	ND	330	77.3	40 - 140	ok
1,4-dichlorobenzene	ND	330	76.0	40 - 140	ok
benzyl alcohol	ND	660	90.8	40 - 140	ok
1,2-dichlorobenzene	ND	330	75.6	40 - 140	ok
2-methylphenol	ND	330	78.6	40 - 140	ok
bis(2-chloroisopropyl)ether	ND	330	87.2	40 - 140	ok
3&4-methylphenol	ND	330	75.4	40 - 140	ok
n-nitrosodi-n-propylamine	ND	330	71.9	40 - 140	ok
hexachloroethane	ND	330	65.8	40 - 140	ok
nitrobenzene	ND	330	71.7	40 - 140	ok
isophrone	ND	330	74.0	40 - 140	ok
2-nitrophenol	ND	330	81.8	40 - 140	ok
2,4-dimethylphenol	ND	330	85.4	40 - 140	ok
benzoic acid	ND	330	42.5	40 - 140	ok
bis(2-chloroethoxy)methane	ND	330	76.9	40 - 140	ok
2,4-dichlorophenol	ND	330	92.2	40 - 140	ok
1,2,4-trichlorobenzene	ND	330	82.3	40 - 140	ok
naphthalene	ND	330	82.9	40 - 140	ok
4-chloroaniline	ND	660	46.1	40 - 140	ok
hexachlorobutadiene	ND	330	81.6	40 - 140	ok
4-chloro-3-methylphenol	ND	660	88.6	40 - 140	ok
2-methylnaphthalene	ND	330	89.9	40 - 140	ok
aniline	ND	330	59.2	40 - 140	ok
hexachlorocyclopentadiene	ND	1700	71.7	40 - 140	ok
2,4,6-trichlorophenol	ND	330	105	40 - 140	ok
2,4,5-trichlorophenol	ND	330	109	40 - 140	ok
2-chloronaphthalene	ND	330	93.2	40 - 140	ok
2-nitroaniline	ND	1700	83.6	40 - 140	ok
dimethylphthalate	ND	330	99.1	40 - 140	ok
acenaphthylene	ND	330	93.1	40 - 140	ok
2,6-dinitrotoluene	ND	330	105	40 - 140	ok
3-nitroaniline	ND	1700	98.3	40 - 140	ok
acenaphthene	ND	330	99.0	40 - 140	ok
2,4-dinitrophenol	ND	3300	58.1	40 - 140	ok
dibenzofuran	ND	330	101	40 - 140	ok
4-nitrophenol	ND	1700	69.6	40 - 140	ok
2,4-dinitrotoluene	ND	330	100	40 - 140	ok
diethylphthalate	ND	330	100	40 - 140	ok
fluorene	ND	330	99.9	40 - 140	ok
4-chlorophenyl phenyl ether	ND	330	112	40 - 140	ok
4-nitroaniline	ND	660	107	40 - 140	ok
4,6-dinitro-2-methylphenol	ND	1700	98.0	40 - 140	ok
n-nitrosodiphenylamine	ND	330	111	40 - 140	ok
4-bromophenyl phenyl ether	ND	330	108	40 - 140	ok
hexachlorobenzene	ND	330	113	40 - 140	ok
pentachlorophenol	ND	1700	88.0	40 - 140	ok
phenanthrene	ND	330	105	40 - 140	ok
anthracene	ND	330	112	40 - 140	ok
carbazole	ND	330	126	40 - 140	ok
di-n-butylphthalate	ND	500	107	40 - 140	ok
fluoranthene	ND	330	99.8	40 - 140	ok
pyrene	ND	330	106	40 - 140	ok
butylbenzylphthalate	ND	330	96.0	40 - 140	ok
benz [a] anthracene	ND	330	98.7	40 - 140	ok
3,3'-dichlorobenzidine	ND	660	143	40 - 140	out
chrysene	ND	330	93.9	40 - 140	ok
bis(2-ethylhexyl)phthalate	ND	330	92.8	40 - 140	ok
di-n-octylphthalate	ND	330	99.5	40 - 140	ok
benzo [b] fluoranthene	ND	330	104	40 - 140	ok
benzo [k] fluoranthene	ND	330	99.2	40 - 140	ok
benzo [a] pyrene	ND	330	103	40 - 140	ok
indeno [1,2,3-cd] pyrene	ND	330	80.2	40 - 140	ok
dibenz [a,h] anthracene	ND	330	79.8	40 - 140	ok
benzo [ghi] perylene	ND	330	84.7	40 - 140	ok
ACOE specifications allows up to five (5) compounds to fail criteria.					
Surrogates:	% Recovery	Limits	% Recovery	Limits	Pass/Fail
2-Fluorophenol	55.6	30-130	62.5	30-130	ok
Phenol-D6	62.7	30-130	65.6	30-130	ok
Nitrobenzene-D5	55.6	30-130	63.8	30-130	ok
2-Fluorobiphenyl	73.0	30-130	81.8	30-130	ok
2,4,6-Tribromophenol	59.2	30-130	96.5	30-130	ok
P-Terphenyl-D14	96.1	30-130	87.2	30-130	ok



GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 6010B ANALYSIS**  
**Metals by ICP**

**QUALITY CONTROL - SOLID**

**DATE PREPARED: 06/25/2004**

QC Sample	Method Blank	Lab Control Sample
Units	mg/kg	% Recovery
Acceptance Limits	Results	80-120 %
<b>Analyte</b>		
Silver (Ag)	<0.500	82.0
Aluminum (Al)	NA	NA
Arsenic (As)	<1.000	91.4
Boron (B)	NA	NA
Barium (Ba)	<0.500	93.4
Beryllium (Be)	<0.500	91.8
Calcium (Ca)	NA	NA
Cadmium (Cd)	<0.500	92.3
Cobalt (Co)	NA	NA
Chromium (Cr)	<0.500	93.9
Copper (Cu)	<1.500	95.1
Iron (Fe)	NA	NA
Magnesium (Mg)	NA	NA
Manganese (Mn)	NA	NA
Molybdenum (Mo)	NA	NA
Nickel (Ni)	<1.000	91.6
Lead (Pb)	<1.000	92.9
Antimony (Sb)	<2.500	92.6
Selenium (Se)	<2.500	88.6
Strontium (Sr)	NA	NA
Titanium (Ti)	NA	NA
Thallium (Tl)	<2.500	89.0
Vanadium (V)	NA	NA
Zinc (Zn)	<1.000	93.5
Zirconium (Zr)	NA	NA

Matrix Spike / Duplicate Spike performed as per method and  
reported if assigned on Chain of Custody.

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 7470/7471 ANALYSIS**  
**Mercury by Cold Vapor Atomic Absorption**

**QUALITY CONTROL - SOLID**

**Date Extracted: 06/28/2004**

QC Sample	Method Blank	Lab Control Sample
Units	mg/kg	% Recovery
Acceptance Limits	Results	85-115 %
<b>Analyte</b>		
Mercury (Hg)	<0.040 (solid)	109

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.

W.O. # 0406-00198  
(for lab use only)

# CHAIN-OF-CUSTODY RECORD

Sample I.D.	Date/Time Sampled (Very Important)	Matrix A-Air S-Soil GW=Ground W. SW=Surface W. WW=Waste W. DW=Drinking W. Other (specify)	ANALYSIS REQUIRED										Total # of Cont.	Note #											
			GC Screen (VOA)	DH Cond	GC 242, 246, 252	GC 601, 602	GC 625	Formaldehyde	8260	8021	8021-8030 List	8021-8030 List			8270 CPULS DBN	8082-PCBs Only	8081 - Pest Only	TPH-GC (Mod 8100)	TPH-GC w/FIN	EPH (MA DEP)	VPH (MA DEP)	TCLP (Spec Below)	Filtration (if requested)	Metals (List Below)	
GRAB-1	6/23 3:45	S																						16	1
GRAB-2	6/23 3:50	S																						16	2
GRAB-3	6/23 3:55	S																						16	3
GRAB-4	6/23 3:45	S																						16	4
GRAB-5	6/23 3:50	S																						16	5
GRAB-6	6/23 3:55	S																						16	6

NOTES: Preservatives, special reporting limits, known contamination, additional testing parameters, etc.

1. "KETTLE"
2. OVEN ASH
3. OVEN OUTLET
4. 2ND BUDG STREET SIDE
5. BACK BUDG 10' BEYOND WALL
6. 2ND BUDG BACKSIDE

RELINQUISHED BY: WALKER DATE/TIME: 6/23/04 5:00 RECEIVED BY: WA/KIN

RELINQUISHED BY: WALKER DATE/TIME: 6/23/04 5:00 RECEIVED BY: WALKER

PROJECT MANAGER: USC EXT: 4702

DATA REPORT ☒ PDF (Adobe) ☐ ASCII ☐ EXCEL Specify State

**GZA GEOENVIRONMENTAL, INC.**  
ENGINEERS AND SCIENTISTS

106 South Street  
Hopkinton, MA 01748  
(508) 435-9244  
FAX (508) 435-9912

TURNAROUND TIME: Standard Rush Days, Approved by: 1720

LAB USE: TEMP. OF COOLER 10.3 °C

GZAFILE NO: 08.0018237.00 P.O. NO. 66364

PROJECT 413-421 Second Street

LOCATION EVERETT, MA

COLLECTOR(S) AMH SHEET 2 OF 2



## **Soil Analyses**

**0407-00078 – 07/16/04**

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA: MA092 NH: 2028 RI: 236  
CT: PH0579 OK: 9928 NC: 615  
NY (NELAC): 11063

**A N A L Y T I C A L   D A T A   R E P O R T**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffrey Hardin

Project No.: 08.0018237.00  
Work Order No.: 0407-00078  
Date Received: 7/16/04  
Date Reported: 7/28/04

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
7/13/2004	Solid	0407-00078 001	101-4
7/13/2004	Solid	0407-00078 002	101-5
7/13/2004	Solid	0407-00078 003	101-6
7/13/2004	Solid	0407-00078 004	102-1
7/13/2004	Solid	0407-00078 005	102-2
7/13/2004	Solid	0407-00078 006	102-3
7/13/2004	Solid	0407-00078 007	103-1
7/13/2004	Solid	0407-00078 008	103-2
7/14/2004	Solid	0407-00078 009	104-1
7/14/2004	Solid	0407-00078 010	104-2
7/14/2004	Solid	0407-00078 011	104-3
7/14/2004	Solid	0407-00078 012	104-4

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 7/16/04  
Date Reported: 7/28/04  
Work Order No.: 0407-00078

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### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 07/15/04 via    GZA courier,    EC,    FEDEX, or    X hand delivered.  
The temperature of the    x temperature blank/    cooler air, was 7.5 degrees C. The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

The chain of custody has been modified to reflect the new project numbers.

#### 2. EPA Method 6010/7471 - Metals

Attach QC 6010 07/19/04 - Solid  
Attach QC Mercury 07/20/04 - Solid

#### 3. MADEP VPH

\* The C5-C8 aliphatic fractions in samples 103-1, 103-2 and 104-1 contain volatile compounds that may not be associated with petroleum. The identities should be confirmed by GC/MS.

Assign EPA Method 8260 analysis to above noted samples (KW 07/27/04 per LF).

Attach QC VPH 07/21/04 - Solid

#### 4. MADEP EPH

Attach QC EPH 07/19/04 - Solid

Were any significant modifications made to the VPH or EPH methods?      ( ) Yes    ( x ) No

#### 5. EPA Method 8260 - VOCs

Attach QC 8260 07/27/04 - Solid

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 7/16/04  
Date Reported: 7/28/04  
Work Order No.: 0407-00078

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Data Authorized By: \_\_\_\_\_

% R = % Recovery  
DF = Dilution Factor  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

### Laboratory Identification Numbers:

MA: MA092      NH: 2028  
CT: PH0579    RI: 236  
NC: 615        NY (NELAC): 11063

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 7/16/04  
Date Reported: 7/28/04  
Work Order No.: 0407-00078

Sample ID: 101-4  
Sample Date: 7/13/2004

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	83.7	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	94.4	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	< 0.20	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/22/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	5.6	mg/kg	RJD	7/22/04
C9-C18 Aliphatic Fraction	MADEP	< 2.0	mg/kg	RJD	7/22/04
C19-C36 Aliphatic Fraction	MADEP	5.6	mg/kg	RJD	7/22/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	5.6	mg/kg	RJD	7/22/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	50.7	%R	RJD	7/22/04
***p-Terphenyl (aromatic): 40-135%R	MADEP	78.9	%R	RJD	7/22/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
2-Methylnaphthalene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Acenaphthylene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04



GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 101-4  
Sample Date: 7/13/2004

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
Acenaphthene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
Fluorene	MADEP	<0.30	mg/kg	RJD	7/22/04
Phenanthrene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [a] Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Chrysene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [b] Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [k] Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [a] Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Indeno [1,2,3-cd] Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Dibenzo [a,h] Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [g,h,i] Perylene	MADEP	<0.30	mg/kg	RJD	7/22/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	<1.14	mg/Kg	AJY	7/20/04
Silver	EPA 6010	<1.14	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	33.9	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	<1.14	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	48.9	mg/Kg	AJY	7/20/04
Copper	EPA 6010	28.1	mg/Kg	AJY	7/20/04
Mercury	EPA 7471A	<0.0604	mg/Kg	NH	7/21/04
Nickel	EPA 6010	34.0	mg/Kg	AJY	7/20/04
Lead	EPA 6010	23.4	mg/Kg	AJY	7/20/04
Antimony	EPA 6010	<5.72	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	<5.72	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	<5.72	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	85.3	mg/Kg	AJY	7/20/04
PERCENT SOLID		43.2	%	TAJ	7/19/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 101-5  
 Sample Date: 7/13/2004

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	97.9	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	102.3	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	< 0.20	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/22/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	< 2.0	mg/kg	RJD	7/22/04
C9-C18 Aliphatic Fraction	MADEP	< 2.0	mg/kg	RJD	7/22/04
C19-C36 Aliphatic Fraction	MADEP	< 2.0	mg/kg	RJD	7/22/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	< 2.0	mg/kg	RJD	7/22/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	79.9	%R	RJD	7/22/04
***p-Terphenyl (aromatic): 40-135%R	MADEP	70.7	%R	RJD	7/22/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
2-Methylnaphthalene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Acenaphthylene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Acenaphthene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Fluorene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Phenanthrene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Anthracene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Fluoranthene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Pyrene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Benzo [a] Anthracene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Chrysene	MADEP	< 0.30	mg/kg	RJD	7/22/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 101-5  
 Sample Date: 7/13/2004

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
Benzo [b] Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [k] Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [a] Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Indeno [1,2,3-cd] Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Dibenzo [a,h] Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [g,h,i] Perylene	MADEP	<0.30	mg/kg	RJD	7/22/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	<0.542	mg/Kg	AJY	7/20/04
Silver	EPA 6010	<0.542	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	2.22	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	<0.542	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	16.2	mg/Kg	AJY	7/20/04
Copper	EPA 6010	8.11	mg/Kg	AJY	7/20/04
Mercury	EPA 7471A	<0.0315	mg/Kg	NH	7/21/04
Nickel	EPA 6010	8.74	mg/Kg	AJY	7/20/04
Lead	EPA 6010	12.4	mg/Kg	AJY	7/20/04
Antimony	EPA 6010	<2.71	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	<2.71	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	<2.71	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	35.3	mg/Kg	AJY	7/20/04
PERCENT SOLID		84.0	%	TAJ	7/19/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 101-6  
 Sample Date: 7/13/2004

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	99.3	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	93.1	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	< 0.20	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/22/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	< 2.0	mg/kg	RJD	7/22/04
C9-C18 Aliphatic Fraction	MADEP	< 2.0	mg/kg	RJD	7/22/04
C19-C36 Aliphatic Fraction	MADEP	< 2.0	mg/kg	RJD	7/22/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	< 2.0	mg/kg	RJD	7/22/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	73.2	%R	RJD	7/22/04
***p-Terphenyl (aromatic): 40-135%R	MADEP	65.1	%R	RJD	7/22/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
2-Methylnaphthalene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Acenaphthylene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Acenaphthene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Fluorene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Phenanthrene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/22/04
Anthracene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Fluoranthene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Pyrene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Benzo [a] Anthracene	MADEP	< 0.30	mg/kg	RJD	7/22/04
Chrysene	MADEP	< 0.30	mg/kg	RJD	7/22/04

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## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
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 Sample Date: 7/13/2004

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
Benzo [b] Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [k] Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [a] Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Indeno [1,2,3-cd] Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Dibenzo [a,h] Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [g,h,i] Perylene	MADEP	<0.30	mg/kg	RJD	7/22/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
<b>PRIORITY POLLUTANT METALS</b>				AJY	7/20/04
Beryllium	EPA 6010	<0.615	mg/Kg	AJY	7/20/04
Silver	EPA 6010	<0.615	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	9.84	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	<0.615	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	58.0	mg/Kg	AJY	7/20/04
Copper	EPA 6010	33.6	mg/Kg	AJY	7/20/04
Mercury	EPA 7471A	<0.0375	mg/Kg	NH	7/21/04
Nickel	EPA 6010	36.8	mg/Kg	AJY	7/20/04
Lead	EPA 6010	13.4	mg/Kg	AJY	7/20/04
Antimony	EPA 6010	<3.08	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	<3.08	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	<3.08	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	86.8	mg/Kg	AJY	7/20/04
<b>PERCENT SOLID</b>		73.9	%	TAJ	7/19/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 102-1  
 Sample Date: 7/13/2004

Sample No.: 004

Test Performed	Method	Results	Units	Tech	Analysis Date
<b>EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)</b>					
Unadjusted C11-C22 Aromatic Fraction	MADEP	150	mg/kg	RJD	7/22/04
C9-C18 Aliphatic Fraction	MADEP	19	mg/kg	RJD	7/22/04
C19-C36 Aliphatic Fraction	MADEP	88	mg/kg	RJD	7/22/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	120	mg/kg	RJD	7/22/04
Surrogates:	MADEP				
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	78.2	%R	RJD	7/22/04
***p-Terphenyl (aromatic): 40-135%R	MADEP	58.3	%R	RJD	7/22/04
<b>TARGETED PAH ANALYTES</b>					
Naphthalene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
2-Methylnaphthalene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
Acenaphthylene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
Acenaphthene (Diesel PAH)	MADEP	0.30	mg/kg	RJD	7/22/04
Fluorene	MADEP	0.34	mg/kg	RJD	7/22/04
Phenanthrene (Diesel PAH)	MADEP	3.4	mg/kg	RJD	7/22/04
Anthracene	MADEP	0.80	mg/kg	RJD	7/22/04
Fluoranthene	MADEP	5.4	mg/kg	RJD	7/22/04
Pyrene	MADEP	5.7	mg/kg	RJD	7/22/04
Benzo [a] Anthracene	MADEP	2.9	mg/kg	RJD	7/22/04
Chrysene	MADEP	3.5	mg/kg	RJD	7/22/04
Benzo [b] Fluoranthene	MADEP	2.7	mg/kg	RJD	7/22/04
Benzo [k] Fluoranthene	MADEP	1.7	mg/kg	RJD	7/22/04
Benzo [a] Pyrene	MADEP	2.5	mg/kg	RJD	7/22/04
Indeno [1,2,3-cd] Pyrene	MADEP	1.8	mg/kg	RJD	7/22/04
Dibenzo [a,h] Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [g,h,i] Perylene	MADEP	1.4	mg/kg	RJD	7/22/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
<b>PRIORITY POLLUTANT METALS</b>					
Beryllium	EPA 6010	<1.01	mg/Kg	AJY	7/20/04
Silver	EPA 6010	6.86	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	12.6	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	15.9	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	29.4	mg/Kg	AJY	7/20/04
Copper	EPA 6010	2200	mg/Kg	AJY	7/21/04
Mercury	EPA 7471A	1.41	mg/Kg	NH	7/21/04
Nickel	EPA 6010	127	mg/Kg	AJY	7/20/04
Lead	EPA 6010	29900	mg/Kg	AJY	7/21/04
Antimony	EPA 6010	144	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	<5.04	mg/Kg	AJY	7/20/04

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## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 102-1  
Sample Date: 7/13/2004

Sample No.: 004

Test Performed	Method	Results	Units	Tech	Analysis Date
Thallium	EPA 6010	< 5.04	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	4060	mg/Kg	AJY	7/21/04
PERCENT SOLID		95.3	%	TAJ	7/19/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 102-2  
 Sample Date: 7/13/2004

Sample No.: 005

Test Performed	Method	Results	Units	Tech	Analysis Date
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)					
Unadjusted C11-C22 Aromatic Fraction	MADEP	200	mg/kg	RJD	7/22/04
C9-C18 Aliphatic Fraction	MADEP	23	mg/kg	RJD	7/22/04
C19-C36 Aliphatic Fraction	MADEP	190	mg/kg	RJD	7/22/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	150	mg/kg	RJD	7/22/04
Surrogates:	MADEP				
***1-Chloroctadecane (aliphatic): 40-116%R	MADEP	92.4	%R	RJD	7/22/04
***p-Terphenyl (aromatic): 40-135%R	MADEP	67.3	%R	RJD	7/22/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
2-Methylnaphthalene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
Acenaphthylene (Diesel PAH)	MADEP	0.38	mg/kg	RJD	7/22/04
Acenaphthene (Diesel PAH)	MADEP	0.35	mg/kg	RJD	7/22/04
Fluorene	MADEP	0.55	mg/kg	RJD	7/22/04
Phenanthrene (Diesel PAH)	MADEP	3.9	mg/kg	RJD	7/22/04
Anthracene	MADEP	1.1	mg/kg	RJD	7/22/04
Fluoranthene	MADEP	7.4	mg/kg	RJD	7/22/04
Pyrene	MADEP	8.0	mg/kg	RJD	7/22/04
Benzo [a] Anthracene	MADEP	3.8	mg/kg	RJD	7/22/04
Chrysene	MADEP	4.4	mg/kg	RJD	7/22/04
Benzo [b] Fluoranthene	MADEP	3.8	mg/kg	RJD	7/22/04
Benzo [k] Fluoranthene	MADEP	2.2	mg/kg	RJD	7/22/04
Benzo [a] Pyrene	MADEP	3.6	mg/kg	RJD	7/22/04
Indeno [1,2,3-cd] Pyrene	MADEP	2.3	mg/kg	RJD	7/22/04
Dibenzo [a,h] Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [g,h,i] Perylene	MADEP	1.7	mg/kg	RJD	7/22/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
PERCENT SOLID		92.2	%	TAJ	7/19/04



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## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 102-3  
 Sample Date: 7/13/2004

Sample No.: 006

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	1.1	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	5.8	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	1.6	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	107	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	94.8	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	<0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	<0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	<0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	<0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	<0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	<0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	0.29	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/22/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	15	mg/kg	RJD	7/22/04
C9-C18 Aliphatic Fraction	MADEP	2.0	mg/kg	RJD	7/22/04
C19-C36 Aliphatic Fraction	MADEP	26	mg/kg	RJD	7/22/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	14	mg/kg	RJD	7/22/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	79.9	%R	RJD	7/22/04
***p-Terphenyl (aromatic): 40-135%R	MADEP	67.4	%R	RJD	7/22/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
2-Methylnaphthalene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
Acenaphthylene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
Acenaphthene (Diesel PAH)	MADEP	<0.30	mg/kg	RJD	7/22/04
Fluorene	MADEP	<0.30	mg/kg	RJD	7/22/04
Phenanthrene (Diesel PAH)	MADEP	0.48	mg/kg	RJD	7/22/04
Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Fluoranthene	MADEP	0.39	mg/kg	RJD	7/22/04
Pyrene	MADEP	0.53	mg/kg	RJD	7/22/04
Benzo [a] Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Chrysene	MADEP	<0.30	mg/kg	RJD	7/22/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 102-3  
 Sample Date: 7/13/2004

Sample No.: 006

Test Performed	Method	Results	Units	Tech	Analysis Date
Benzo [b] Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [k] Fluoranthene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [a] Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Indeno [1,2,3-cd] Pyrene	MADEP	<0.30	mg/kg	RJD	7/22/04
Dibenzo [a,h] Anthracene	MADEP	<0.30	mg/kg	RJD	7/22/04
Benzo [g,h,i] Perylene	MADEP	<0.30	mg/kg	RJD	7/22/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	<0.617	mg/Kg	AJY	7/20/04
Silver	EPA 6010	<0.617	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	12.6	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	3.28	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	17.8	mg/Kg	AJY	7/20/04
Copper	EPA 6010	207	mg/Kg	AJY	7/20/04
Mercury	EPA 7471A	0.965	mg/Kg	NH	7/21/04
Nickel	EPA 6010	23.8	mg/Kg	AJY	7/20/04
Lead	EPA 6010	2590	mg/Kg	AJY	7/20/04
Antimony	EPA 6010	11.0	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	<3.09	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	<3.09	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	1310	mg/Kg	AJY	7/20/04
PERCENT SOLID		80.5	%	TAJ	7/19/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 103-1  
 Sample Date: 7/13/2004

Sample No.: 007

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	2.9*	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	2.6	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	100	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	91.1	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	1.8	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/23/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	62	mg/kg	RJD	7/23/04
C9-C18 Aliphatic Fraction	MADEP	43	mg/kg	RJD	7/23/04
C19-C36 Aliphatic Fraction	MADEP	53	mg/kg	RJD	7/23/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	39	mg/kg	RJD	7/23/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-116 %R	MADEP	65.7	%R	RJD	7/23/04
***p-Terphenyl (aromatic): 40-135 %R	MADEP	56.2	%R	RJD	7/23/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	20	mg/kg	RJD	7/23/04
2-Methylnaphthalene (Diesel PAH)	MADEP	2.5	mg/kg	RJD	7/23/04
Acenaphthylene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/23/04
Acenaphthene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/23/04
Fluorene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Phenanthrene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/23/04
Anthracene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Fluoranthene	MADEP	0.35	mg/kg	RJD	7/23/04
Pyrene	MADEP	0.41	mg/kg	RJD	7/23/04
Benzo [a] Anthracene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Chrysene	MADEP	< 0.30	mg/kg	RJD	7/23/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 103-1  
 Sample Date: 7/13/2004

Sample No.: 007

Test Performed	Method	Results	Units	Tech	Analysis Date
Benzo [b] Fluoranthene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Benzo [k] Fluoranthene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Benzo [a] Pyrene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Indeno [1,2,3-cd] Pyrene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Dibenzo [a,h] Anthracene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Benzo [g,h,i] Perylene	MADEP	< 0.30	mg/kg	RJD	7/23/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	< 1.11	mg/Kg	AJY	7/20/04
Silver	EPA 6010	15.5	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	14.5	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	59.5	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	46.0	mg/Kg	AJY	7/20/04
Copper	EPA 6010	4940	mg/Kg	AJY	7/21/04
Mercury	EPA 7471A	0.856	mg/Kg	NH	7/21/04
Nickel	EPA 6010	10800	mg/Kg	AJY	7/21/04
Lead	EPA 6010	155000	mg/Kg	AJY	7/21/04
Antimony	EPA 6010	62.6	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	< 5.56	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	< 5.56	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	30900	mg/Kg	AJY	7/21/04
PERCENT SOLID		86.0	%	TAJ	7/19/04
VOLATILE ORGANICS	EPA 8260			MQS	7/27/04
Dichlorodifluoromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chloromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Vinyl Chloride	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromomethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Trichlorofluoromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Diethylether	EPA 8260	< 75	ug/kg	MQS	7/27/04
Acetone	EPA 8260	< 750	ug/kg	MQS	7/27/04
1,1-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dichloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Methyl-Tert-Butyl-Ether	EPA 8260	< 75	ug/kg	MQS	7/27/04
trans-1,2-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1-Dichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
2-Butanone	EPA 8260	< 750	ug/kg	MQS	7/27/04
2,2-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
cis-1,2-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Chloroform	EPA 8260	< 75	ug/kg	MQS	7/27/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 103-1  
 Sample Date: 7/13/2004

Sample No.: 007

Test Performed	Method	Results	Units	Tech	Analysis Date
Bromochloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Tetrahydrofuran	EPA 8260	< 150	ug/kg	MQS	7/27/04
1,1,1-Trichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Carbon Tetrachloride	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2-Dichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Benzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Trichloroethene	EPA 8260	2500	ug/kg	MQS	7/27/04
1,2-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromodichloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dibromomethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
4-Methyl-2-Pentanone	EPA 8260	< 150	ug/kg	MQS	7/27/04
cis-1,3-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Toluene	EPA 8260	< 75	ug/kg	MQS	7/27/04
trans-1,3-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1,2-Trichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
2-Hexanone	EPA 8260	< 150	ug/kg	MQS	7/27/04
1,3-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Tetrachloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dibromochloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2-Dibromoethane (EDB)	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chlorobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1,1,2-Tetrachloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Ethylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
m&p-Xylene	EPA 8260	< 75	ug/kg	MQS	7/27/04
o-Xylene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Styrene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromoform	EPA 8260	< 150	ug/kg	MQS	7/27/04
Isopropylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1,2,2-Tetrachloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2,3-Trichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
n-Propylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
2-Chlorotoluene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,3,5-Trimethylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
4-Chlorotoluene	EPA 8260	< 75	ug/kg	MQS	7/27/04
tert-Butylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2,4-Trimethylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
sec-Butylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
p-Isopropyltoluene	EPA 8260	< 75	ug/kg	MQS	7/27/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 103-1  
 Sample Date: 7/13/2004

Sample No.: 007

Test Performed	Method	Results	Units	Tech	Analysis Date
1,3-Dichlorobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,4-Dichlorobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
n-Butylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2-Dichlorobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2-Dibromo-3-Chloropropane	EPA 8260	< 380	ug/kg	MQS	7/27/04
1,2,4-Trichlorobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Hexachlorobutadiene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Naphthalene	EPA 8260	2400	ug/kg	MQS	7/27/04
1,2,3-Trichlorobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Surrogates:	EPA 8260				
***1,2-Dichloroethane-D4	EPA 8260	98.2	% R	MQS	7/27/04
***Toluene-D8	EPA 8260	105	% R	MQS	7/27/04
***4-Bromofluorobenzene	EPA 8260	102	% R	MQS	7/27/04
Preparation	EPA 5035	15	DF	MQS	7/27/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 103-2  
 Sample Date: 7/13/2004

Sample No.: 008

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	1.1*	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	99.0	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	88.9	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	< 0.20	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	< 1.08	mg/Kg	AJY	7/20/04
Silver	EPA 6010	< 1.08	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	12.0	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	6.72	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	20.1	mg/Kg	AJY	7/20/04
Copper	EPA 6010	9700	mg/Kg	AJY	7/21/04
Mercury	EPA 7471A	0.101	mg/Kg	NH	7/21/04
Nickel	EPA 6010	365	mg/Kg	AJY	7/20/04
Lead	EPA 6010	25500	mg/Kg	AJY	7/21/04
Antimony	EPA 6010	24.8	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	< 5.42	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	< 5.42	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	4030	mg/Kg	AJY	7/21/04
PERCENT SOLID		85.1	%	TAJ	7/19/04
VOLATILE ORGANICS				MQS	7/27/04
Dichlorodifluoromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chloromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Vinyl Chloride	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromomethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 103-2  
 Sample Date: 7/13/2004

Sample No.: 008

Test Performed	Method	Results	Units	Tech	Analysis Date
Trichlorofluoromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Diethylether	EPA 8260	< 75	ug/kg	MQS	7/27/04
Acetone	EPA 8260	< 750	ug/kg	MQS	7/27/04
1,1-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dichloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Methyl-Tert-Butyl-Ether	EPA 8260	< 75	ug/kg	MQS	7/27/04
trans-1,2-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1-Dichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
2-Butanone	EPA 8260	< 750	ug/kg	MQS	7/27/04
2,2-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
cis-1,2-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Chloroform	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromochloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Tetrahydrofuran	EPA 8260	< 150	ug/kg	MQS	7/27/04
1,1,1-Trichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Carbon Tetrachloride	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2-Dichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Benzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Trichloroethene	EPA 8260	190	ug/kg	MQS	7/27/04
1,2-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromodichloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dibromomethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
4-Methyl-2-Pentanone	EPA 8260	< 150	ug/kg	MQS	7/27/04
cis-1,3-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Toluene	EPA 8260	< 75	ug/kg	MQS	7/27/04
trans-1,3-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1,2-Trichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
2-Hexanone	EPA 8260	< 150	ug/kg	MQS	7/27/04
1,3-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Tetrachloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dibromochloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2-Dibromoethane (EDB)	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chlorobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1,1,2-Tetrachloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Ethylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
m&p-Xylene	EPA 8260	< 75	ug/kg	MQS	7/27/04
o-Xylene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Styrene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromoform	EPA 8260	< 150	ug/kg	MQS	7/27/04



GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 103-2  
 Sample Date: 7/13/2004

Sample No.: 008

Test Performed	Method	Results	Units	Tech	Analysis Date
Isopropylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,1,2,2-Tetrachloroethane	EPA 8260	<75	ug/kg	MQS	7/27/04
1,2,3-Trichloropropane	EPA 8260	<75	ug/kg	MQS	7/27/04
Bromobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
n-Propylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
2-Chlorotoluene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,3,5-Trimethylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
4-Chlorotoluene	EPA 8260	<75	ug/kg	MQS	7/27/04
tert-Butylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,2,4-Trimethylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
sec-Butylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
p-Isopropyltoluene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,3-Dichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,4-Dichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
n-Butylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,2-Dichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,2-Dibromo-3-Chloropropane	EPA 8260	<380	ug/kg	MQS	7/27/04
1,2,4-Trichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
Hexachlorobutadiene	EPA 8260	<75	ug/kg	MQS	7/27/04
Naphthalene	EPA 8260	240	ug/kg	MQS	7/27/04
1,2,3-Trichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
Surrogates:	EPA 8260				
***1,2-Dichloroethane-D4	EPA 8260	99.0	% R	MQS	7/27/04
***Toluene-D8	EPA 8260	105	% R	MQS	7/27/04
***4-Bromofluorobenzene	EPA 8260	104	% R	MQS	7/27/04
Preparation	EPA 5035	15	DF	MQS	7/27/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 104-1  
 Sample Date: 7/14/2004

Sample No.: 009

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	2.5*	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	90.3	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	108	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	< 0.20	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	4.14	mg/Kg	AJY	7/20/04
Silver	EPA 6010	11.0	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	8.48	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	14.0	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	35.8	mg/Kg	AJY	7/20/04
Copper	EPA 6010	2080	mg/Kg	AJY	7/20/04
Mercury	EPA 7471A	1.49	mg/Kg	NH	7/21/04
Nickel	EPA 6010	86.4	mg/Kg	AJY	7/20/04
Lead	EPA 6010	2290	mg/Kg	AJY	7/20/04
Antimony	EPA 6010	< 2.75	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	< 2.75	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	< 2.75	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	2340	mg/Kg	AJY	7/20/04
PERCENT SOLID		84.7	%	TAJ	7/19/04
VOLATILE ORGANICS				MQS	7/27/04
Dichlorodifluoromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chloromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Vinyl Chloride	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromomethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 104-1  
 Sample Date: 7/14/2004

Sample No.: 009

Test Performed	Method	Results	Units	Tech	Analysis Date
Trichlorofluoromethane	EPA 8260	< 150	ug/kg	MQS	7/27/04
Diethylether	EPA 8260	< 75	ug/kg	MQS	7/27/04
Acetone	EPA 8260	< 750	ug/kg	MQS	7/27/04
1,1-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dichloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Methyl-Tert-Butyl-Ether	EPA 8260	< 75	ug/kg	MQS	7/27/04
trans-1,2-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1-Dichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
2-Butanone	EPA 8260	< 750	ug/kg	MQS	7/27/04
2,2-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
cis-1,2-Dichloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Chloroform	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromochloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Tetrahydrofuran	EPA 8260	< 150	ug/kg	MQS	7/27/04
1,1,1-Trichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Carbon Tetrachloride	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2-Dichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Benzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Trichloroethene	EPA 8260	110	ug/kg	MQS	7/27/04
1,2-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromodichloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dibromomethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
4-Methyl-2-Pentanone	EPA 8260	< 150	ug/kg	MQS	7/27/04
cis-1,3-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Toluene	EPA 8260	< 75	ug/kg	MQS	7/27/04
trans-1,3-Dichloropropene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1,2-Trichloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
2-Hexanone	EPA 8260	< 150	ug/kg	MQS	7/27/04
1,3-Dichloropropane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Tetrachloroethene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Dibromochloromethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,2-Dibromoethane (EDB)	EPA 8260	< 150	ug/kg	MQS	7/27/04
Chlorobenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
1,1,1,2-Tetrachloroethane	EPA 8260	< 75	ug/kg	MQS	7/27/04
Ethylbenzene	EPA 8260	< 75	ug/kg	MQS	7/27/04
m&p-Xylene	EPA 8260	< 75	ug/kg	MQS	7/27/04
o-Xylene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Styrene	EPA 8260	< 75	ug/kg	MQS	7/27/04
Bromoform	EPA 8260	< 150	ug/kg	MQS	7/27/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 104-1  
 Sample Date: 7/14/2004

Sample No.: 009

Test Performed	Method	Results	Units	Tech	Analysis Date
Isopropylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,1,2,2-Tetrachloroethane	EPA 8260	<75	ug/kg	MQS	7/27/04
1,2,3-Trichloropropane	EPA 8260	<75	ug/kg	MQS	7/27/04
Bromobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
n-Propylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
2-Chlorotoluene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,3,5-Trimethylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
4-Chlorotoluene	EPA 8260	<75	ug/kg	MQS	7/27/04
tert-Butylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,2,4-Trimethylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
sec-Butylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
p-Isopropyltoluene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,3-Dichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,4-Dichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
n-Butylbenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,2-Dichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
1,2-Dibromo-3-Chloropropane	EPA 8260	<380	ug/kg	MQS	7/27/04
1,2,4-Trichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
Hexachlorobutadiene	EPA 8260	<75	ug/kg	MQS	7/27/04
Naphthalene	EPA 8260	340	ug/kg	MQS	7/27/04
1,2,3-Trichlorobenzene	EPA 8260	<75	ug/kg	MQS	7/27/04
Surrogates:	EPA 8260				
***1,2-Dichloroethane-D4	EPA 8260	99.1	% R	MQS	7/27/04
***Toluene-D8	EPA 8260	105	% R	MQS	7/27/04
***4-Bromofluorobenzene	EPA 8260	103	% R	MQS	7/27/04
Preparation	EPA 5035	15	DF	MQS	7/27/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 104-2  
 Sample Date: 7/14/2004

Sample No.: 010

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	97.7	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	92.9	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	< 0.20	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	< 0.585	mg/Kg	AJY	7/20/04
Silver	EPA 6010	< 0.585	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	8.77	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	3.76	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	20.2	mg/Kg	AJY	7/20/04
Copper	EPA 6010	696	mg/Kg	AJY	7/20/04
Mercury	EPA 7471A	0.898	mg/Kg	NH	7/21/04
Nickel	EPA 6010	23.8	mg/Kg	AJY	7/20/04
Lead	EPA 6010	2910	mg/Kg	AJY	7/20/04
Antimony	EPA 6010	9.97	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	< 2.92	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	< 2.92	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	2890	mg/Kg	AJY	7/20/04
PERCENT SOLID		81.6	%	TAJ	7/19/04

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## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 104-3  
 Sample Date: 7/14/2004

Sample No.: 011

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	1.6	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	91.6	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	109	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	< 0.20	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/23/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	120	mg/kg	RJD	7/23/04
C9-C18 Aliphatic Fraction	MADEP	< 2.0	mg/kg	RJD	7/23/04
C19-C36 Aliphatic Fraction	MADEP	25	mg/kg	RJD	7/23/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	80	mg/kg	RJD	7/23/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	97.2	%R	RJD	7/23/04
***p-Terphenyl (aromatic): 40-135%R	MADEP	78.1	%R	RJD	7/23/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/23/04
2-Methylnaphthalene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/23/04
Acenaphthylene (Diesel PAH)	MADEP	< 0.30	mg/kg	RJD	7/23/04
Acenaphthene (Diesel PAH)	MADEP	0.61	mg/kg	RJD	7/23/04
Fluorene	MADEP	0.98	mg/kg	RJD	7/23/04
Phenanthrene (Diesel PAH)	MADEP	5.9	mg/kg	RJD	7/23/04
Anthracene	MADEP	1.6	mg/kg	RJD	7/23/04
Fluoranthene	MADEP	6.3	mg/kg	RJD	7/23/04
Pyrene	MADEP	6.4	mg/kg	RJD	7/23/04
Benzo [a] Anthracene	MADEP	2.6	mg/kg	RJD	7/23/04
Chrysene	MADEP	3.4	mg/kg	RJD	7/23/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 104-3  
 Sample Date: 7/14/2004

Sample No.: 011

Test Performed	Method	Results	Units	Tech	Analysis Date
Benzo [b] Fluoranthene	MADEP	2.2	mg/kg	RJD	7/23/04
Benzo [k] Fluoranthene	MADEP	1.6	mg/kg	RJD	7/23/04
Benzo [a] Pyrene	MADEP	2.3	mg/kg	RJD	7/23/04
Indeno [1,2,3-cd] Pyrene	MADEP	1.4	mg/kg	RJD	7/23/04
Dibenzo [a,h] Anthracene	MADEP	<0.30	mg/kg	RJD	7/23/04
Benzo [g,h,i] Perylene	MADEP	1.1	mg/kg	RJD	7/23/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	<0.482	mg/Kg	AJY	7/20/04
Silver	EPA 6010	<0.482	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	8.65	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	1.45	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	13.1	mg/Kg	AJY	7/20/04
Copper	EPA 6010	66.3	mg/Kg	AJY	7/20/04
Mercury	EPA 7471A	0.362	mg/Kg	NH	7/21/04
Nickel	EPA 6010	10.4	mg/Kg	AJY	7/20/04
Lead	EPA 6010	1210	mg/Kg	AJY	7/20/04
Antimony	EPA 6010	4.25	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	<2.41	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	<2.41	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	2810	mg/Kg	AJY	7/20/04
PERCENT SOLID		77.4	%	TAJ	7/19/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 104-4  
 Sample Date: 7/14/2004

Sample No.: 012

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/21/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	< 1.0	mg/kg	MAM	7/21/04
C9-C12 Aliphatics	MADEP	2.2	mg/kg	MAM	7/21/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 1.0	mg/kg	MAM	7/21/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	100	% R	MAM	7/21/04
***2,5-Dibromotoluene (FID)	MADEP	116	% R	MAM	7/21/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 0.50	mg/kg	MAM	7/21/04
Benzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Toluene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Ethylbenzene	MADEP	< 0.10	mg/kg	MAM	7/21/04
m&p-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
o-Xylene	MADEP	< 0.10	mg/kg	MAM	7/21/04
Naphthalene	MADEP	< 0.20	mg/kg	MAM	7/21/04
Preparation	EPA 5035	1	DF	MAM	7/21/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/23/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	1100	mg/kg	RJD	7/23/04
C9-C18 Aliphatic Fraction	MADEP	9.1	mg/kg	RJD	7/23/04
C19-C36 Aliphatic Fraction	MADEP	78	mg/kg	RJD	7/23/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	800	mg/kg	RJD	7/23/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	40.9	%R	RJD	7/23/04
***p-Terphenyl (aromatic): 40-135%R	MADEP	77.7	%R	RJD	7/23/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	10	mg/kg	RJD	7/23/04
2-Methylnaphthalene (Diesel PAH)	MADEP	5.8	mg/kg	RJD	7/23/04
Acenaphthylene (Diesel PAH)	MADEP	2.0	mg/kg	RJD	7/23/04
Acenaphthene (Diesel PAH)	MADEP	9.1	mg/kg	RJD	7/23/04
Fluorene	MADEP	16	mg/kg	RJD	7/23/04
Phenanthrene (Diesel PAH)	MADEP	50	mg/kg	RJD	7/23/04
Anthracene	MADEP	13	mg/kg	RJD	7/23/04
Fluoranthene	MADEP	40	mg/kg	RJD	7/23/04
Pyrene	MADEP	46	mg/kg	RJD	7/23/04
Benzo [a] Anthracene	MADEP	28	mg/kg	RJD	7/23/04
Chrysene	MADEP	25	mg/kg	RJD	7/23/04



GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00078

Sample ID: 104-4  
 Sample Date: 7/14/2004

Sample No.: 012

Test Performed	Method	Results	Units	Tech	Analysis Date
Benzo [b] Fluoranthene	MADEP	21	mg/kg	RJD	7/23/04
Benzo [k] Fluoranthene	MADEP	6.3	mg/kg	RJD	7/23/04
Benzo [a] Pyrene	MADEP	17	mg/kg	RJD	7/23/04
Indeno [1,2,3-cd] Pyrene	MADEP	5.7	mg/kg	RJD	7/23/04
Dibenzo [a,h] Anthracene	MADEP	< 5.0	mg/kg	RJD	7/23/04
Benzo [g,h,i] Perylene	MADEP	4.0	mg/kg	RJD	7/23/04
Extraction	EPA 3545	1.0	DF	ARL	7/19/04
PRIORITY POLLUTANT METALS				AJY	7/20/04
Beryllium	EPA 6010	< 0.965	mg/Kg	AJY	7/20/04
Silver	EPA 6010	< 0.965	mg/Kg	AJY	7/20/04
Arsenic	EPA 6010	24.2	mg/Kg	AJY	7/20/04
Cadmium	EPA 6010	4.25	mg/Kg	AJY	7/20/04
Chromium	EPA 6010	51.4	mg/Kg	AJY	7/20/04
Copper	EPA 6010	189	mg/Kg	AJY	7/20/04
Mercury	EPA 7471A	0.555	mg/Kg	NH	7/21/04
Nickel	EPA 6010	31.1	mg/Kg	AJY	7/20/04
Lead	EPA 6010	10900	mg/Kg	AJY	7/20/04
Antimony	EPA 6010	13.4	mg/Kg	AJY	7/20/04
Selenium	EPA 6010	< 4.83	mg/Kg	AJY	7/20/04
Thallium	EPA 6010	< 4.83	mg/Kg	AJY	7/20/04
Zinc	EPA 6010	2110	mg/Kg	AJY	7/20/04
PERCENT SOLID		50.6	%	TAJ	7/19/04

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 106 SOUTH ST, HOPKINTON, MA 01748  
 MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 6010B ANALYSIS**  
**Metals by ICP**

**QUALITY CONTROL - SOLID**

**DATE PREPARED: 7/19/04**

QC Sample	Method Blank	ab Control Sample
Units	mg/kg	% Recovery
Acceptance Limits	Results	80-120 %
<b>Analyte</b>		
Silver (Ag)	<0.500	83.6
Aluminum (Al)	NA	NA
Arsenic (As)	<1.000	88.2
Boron (B)	NA	NA
Barium (Ba)	NA	NA
Beryllium (Be)	<0.500	88.9
Calcium (Ca)	NA	NA
Cadmium (Cd)	<0.500	91.9
Cobalt (Co)	NA	NA
Chromium (Cr)	<0.500	91.4
Copper (Cu)	<1.500	108
Iron (Fe)	NA	NA
Magnesium (Mg)	NA	NA
Manganese (Mn)	NA	NA
Molybdenum (Mo)	NA	NA
Nickel (Ni)	<1.000	90.5
Lead (Pb)	<1.000	91.9
Antimony (Sb)	<2.500	89.6
Selenium (Se)	<2.500	85.5
Strontium (Sr)	NA	NA
Titanium (Ti)	NA	NA
Thallium (Tl)	<2.500	89.2
Vanadium (V)	NA	NA
Zinc (Zn)	<1.000	96.2
Zirconium (Zr)	NA	NA

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.

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MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 7470/7471 ANALYSIS**  
**Mercury by Cold Vapor Atomic Absorption**

**QUALITY CONTROL - SOLID**

**Date Analyzed: 07/20/2004**

QC Sample	Method Blank	Lab Control Sample
Units	mg/L	% Recovery
Acceptance Limits	Results	85-115 %
<b>Analyte</b>		
Mercury (Hg)	<0.040 (solid)	94.0

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.

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106 SOUTH STREET, HOPKINTON, MA 01748 (781) 278-4708  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP EPH  
EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

EXT. DATE: 7/19/04

Solid

LABORATORY CONTROL SAMPLE DUPLICATE LCS	LCS Recovery (%)	LCS Dup Recovery (%)	Limits
<b>Aliphatics:</b>			
Nonane	39.0	38.3	30-140
Decane	51.0	44.0	40-140
Dodecane	63.8	45.2	40-140
Tetradecane	76.5	53.2	40-140
Hexadecane	85.5	58.9	40-140
Octadecane	88.2	62.7	40-140
Nonadecane	93.7	63.4	40-140
Eicosane	99.8	67.0	40-140
Docosane	94.0	64.0	40-140
Tetracosane	96.7	66.5	40-140
Hexacosane	93.0	64.1	40-140
Octacosane	93.2	64.8	40-140
Triacontane	93.0	65.7	40-140
Hexatriacontane	95.9	66.4	40-140
<b>Aromatics:</b>			
Naphthalene	63.0	63.5	40-140
2-Methylnaphthalene	63.1	46.1	40-140
Acenaphthylene	53.9	67.6	40-140
Acenaphthene	52.3	68.3	40-140
Fluorene	68.5	80.4	40-140
Phenanthrene	68.8	81.2	40-140
Anthracene	65.4	82.8	40-140
Fluoranthene	76.1	88.2	40-140
Pyrene	75.5	88.0	40-140
Benzo(a)anthracene	72.5	81.6	40-140
Chrysene	79.1	88.5	40-140
Benzo(b)fluoranthene	67.9	77.2	40-140
Benzo(k)fluoranthene	78.5	88.6	40-140
Benzo(a)pyrene	72.3	81.6	40-140
Indeno(1,2,3-c,d)pyrene	62.8	71.5	40-140
Dibenzo(a,h)anthracene	82.5	92.5	40-140
Benzo(g,h,i)perylene	71.3	80.4	40-140
<b>Surrogate:</b>			
***1-Chlorooctadecane (Aliphatic)	97.5	79.2	40-130
***p-Terphenyl (Aromatic)	83.3	94.3	40-130
<b>Fractionation Surrogate:</b>			
***2-Bromonaphthalene	45.9	56.8	40-140

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 MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP EPH**  
**EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

EXT. DATE: 7/19/04

Solid

Page 1 of 2

METHOD BLANK	AQUEOUS	SOLID
	ug/L-PPB	mg/kg - PPM
<b>UNWEIGHTED CONC.</b>		
C9-C18 Aliphatics	<100	<1.0
C19-C36 Aliphatics	<100	<1.0
C10-C22 Aromatics	<100	<2.0
C10-C22 Aromatics (adjusted)	<100	<1.0
<b>TARGET COMPOUNDS</b>		
Naphthalene	<5.0	<0.30
2-Methylnaphthalene	<5.0	<0.30
Acenaphthylene	<5.0	<0.30
Acenaphthene	<5.0	<0.30
Fluorene	<5.0	<0.30
Phenanthrene	<5.0	<0.30
Anthracene	<5.0	<0.30
Fluoranthene	<5.0	<0.30
Pyrene	<5.0	<0.30
Benzo(a)anthracene	<5.0	<0.30
Chrysene	<5.0	<0.30
Benzo(b)fluoranthene	<5.0	<0.30
Benzo(k)fluoranthene	<5.0	<0.30
Benzo(a)pyrene	<5.0	<0.30
Indeno(1,2,3-c,d)pyrene	<5.0	<0.30
Dibenzo(a,h)anthracene	<5.0	<0.30
Benzo(g,h,i)perylene	<5.0	<0.30
<b>Surrogate:</b>	<b>Recovery (%)</b>	<b>Acceptance Limits</b>
***1-Chlorooctadecane (Aliphatic)	96.4	40-140
***p-Terphenyl (Aromatic)	84.2	40-140
<b>Fractionation Surrogate:</b>		
***2-Bromonaphthalene	52.3	40-140

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 MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP VOLATILE PETROLEUM HYDROCARBONS (VPH) / ME DEP 4.2.17 - GRO / EPA Method 8021  
 PURGEABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

**DATE:** 07/21/04      **Solid**

<b>METHOD BLANK</b>	<b>AQUEOUS</b> ug/L-PPB	<b>SOLID</b> mg/kg - PPM	
<b>HYDROCARBON FRACTIONS</b>			
C5-C8 Aliphatics	<5.0	<0.5	
C9-C12 Aliphatics	<5.0	<0.5	
C9-C10 Aromatics	<5.0	<0.5	
<b>TARGET COMPOUNDS</b>			
Methyl tert butyl ether	<2.0	<0.25	
Benzene	<0.5	<0.05	
Toluene	<0.5	<0.05	
Ethylbenzene	<0.5	<0.05	
m,p-Xylenes	<0.5	<0.05	
o-Xylene	<0.5	<0.05	
Naphthalene	<1.0	<0.10	
<b>Surrogate:</b>	<b>% Recovery</b>	<b>Limits - Aqueous</b>	<b>Limits - Solid</b>
***2,5-Dibromotoluene (FID)	102	70-130	70-130
***2,5-Dibromotoluene (PID)	90.0	70-130	70-130
<hr/>			
<b>LABORATORY CONTROL SAMPLE</b>	<b>% Recovery</b>	<b>Limits - Aqueous</b>	<b>Limits - Solid</b>
Methyl tert butyl ether	94.8	70-130	70-130
Benzene	96.3	70-130	70-130
Toluene	94.8	70-130	70-130
Ethylbenzene	93.4	70-130	70-130
m,p-Xylenes	94.9	70-130	70-130
o-Xylene	90.9	70-130	70-130
Naphthalene	83.0	-	-
<b>Surrogate:</b>			
***2,5-Dibromotoluene (FID)	115	70-130	70-130
***2,5-Dibromotoluene (PID)	93.0	70-130	70-130



# CHAIN-OF-CUSTODY RECORD

W.O. # 0407-00078  
(for lab use only)

Sample I.D.	Date/Time Sampled (Very Important)	Matrix A=Air S=Soil GW=Ground W. SW=Surface W. WW=Waste W. DW=Drinking W. Other (specify)	ANALYSIS REQUIRED										Total # of Cont.	Note #									
			WW ONLY																				
			DH Cond	GC Screen (VDA)	D524.2 D502.2	D601 D602	D625	Formaldehyde	8021	8021 - "8010" List	8021 CFIL □ PAH □ BN	8082-PCBs Only	8081 - Pest Only	TPH-GC (Mod. 8100)	TPH-GC w/Fluor	EPH (MA DEP)	VPH (MA DEP)	TCLP (Spec. Below)	Filtrate (if requested)	Metals (List Below)	Metals (List Below)		
101-4	7/13 9:00 AM	S																				3	1,2
101-5	7/13 9:15 AM	S																				3	
101-6	7/13 9:30 AM	S																				3	
102-1	7/13 1:00 PM	S																				3	
102-2	7/13 1:15 PM	S																				3	
102-3	7/13 1:30 PM	S																				1	
103-1	7/13 3:30 PM	S																				3	
103-2	7/13 4:00 PM	S																				2	
104-1	7/14 9:00 AM	S																				3	
104-2	7/14 9:15 AM	S																				2	
104-3	7/14 9:30 AM	S																				2	
104-4	7/14 10:00 AM	S																				3	

PRESERVATIVE (Cl - HCl, M=MeOH, N - HNO3, S - H2SO4, Na - NaOH, O - Other)\*

CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, O-Other)\*

NOTES: Preservatives, special reporting limits, known contamination, additional testing parameters, etc.:

RECEIVED BY: 7/15/04 Merid 1630

RELINQUISHED BY: James Hardin

DATE/TIME 7/15/04 Merid 1630

RELINQUISHED BY: Merid

DATE/TIME 7/15/04 1635 work

RELINQUISHED BY: work

DATE/TIME 7/15/04 0730

PROJECT MANAGER: Lisa Faulkner EXT: 4702

DATA REPORT ☒ PDF (Adobe) ☐ ASCII ☐ EXCEL Specify State

**GZA GEOENVIRONMENTAL, INC.**  
**ENGINEERS AND SCIENTISTS**

106 South Street  
Hopkinton, MA 01748  
(508) 435-9244  
FAX (508) 435-9912

TURNAROUND TIME: Standard Rush Days, Approved by: Standard

LAB USE:

TEMP. OF COOLER 7.5 °C

GZAFILE NO: 08.0018237.00 P.O. NO. 1635

PROJECT 413-421 Second ST

LOCATION Everett, MA

COLLECTOR(S) James Hardin SHEET OF





## **Soil Analyses**

**0504-00158 – 04/22/05**

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA and ME: MA092 NH: 2028  
CT: PH0579 RI: LAO00236  
NELAC - NYS DOH: 11063

**ANALYTICAL DATA REPORT**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffery Hardin

Project No.: 08.0018237.00  
Work Order No.: 0504-00158  
Date Received: 4/22/05  
Date Reported: 5/02/05

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
4/19/2005	Solid	0504-00158 001	B-201 S-1
4/19/2005	Solid	0504-00158 002	B-201 S-3
4/20/2005	Solid	0504-00158 003	B-202 S-1
4/20/2005	Solid	0504-00158 004	B-202 S-2
4/19/2005	Solid	0504-00158 005	B-203 S-1
4/19/2005	Solid	0504-00158 006	B-203 S-2
4/20/2005	Solid	0504-00158 007	B-204 S-1
4/20/2005	Solid	0504-00158 008	B-204 S-2
4/19/2005	Solid	0504-00158 009	B-205 S-1
4/19/2005	Solid	0504-00158 010	B-205 S-3
4/20/2005	Solid	0504-00158 011	B-206 S-1
4/20/2005	Solid	0504-00158 012	B-206 S-3
4/19/2005	Solid	0504-00158 013	B-207 S-1
4/19/2005	Solid	0504-00158 014	B-207 S-2
4/20/2005	Solid	0504-00158 015	B-208 S-1
4/20/2005	Solid	0504-00158 016	B-208 S-2

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 4/22/05  
Date Reported: 5/02/05  
Work Order No.: 0504-00158

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### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 04/21/05 via    GZA courier,    EC,    FEDEX, or   x   hand delivered.  
The temperature of the    temperature blank/  x   cooler air, was 1.9 degrees C. The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

#### 2. EPA Method 6010B/7471A - Metals

Attach QC 6010B 04/22/05 B - Solid  
Attach QC Mercury 04/25/05 - Solid

#### 3. EPA Method 8270 - PAHs

Attach QC 8270 04/25/05 - Solid  
Attach QC 8270 04/26/05 - Solid

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 4/22/05  
Date Reported: 5/02/05  
Work Order No.: 0504-00158

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Data Authorized By: 

% R = % Recovery  
DF = Dilution Factor  
DFS = Dilution Factor Solids  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 4/22/05  
Date Reported: 5/02/05  
Work Order No.: 0504-00158

Sample ID: B-201 S-1  
Sample Date: 4/19/2005

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	2800	ug/kg	CMG	4/27/05
2-Methylnaphthalene	EPA 8270	4000	ug/kg	CMG	4/27/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthene	EPA 8270	670	ug/kg	CMG	4/27/05
Fluorene	EPA 8270	750	ug/kg	CMG	4/27/05
Phenanthrene	EPA 8270	8800	ug/kg	CMG	4/27/05
Anthracene	EPA 8270	1600	ug/kg	CMG	4/27/05
Fluoranthene	EPA 8270	8000	ug/kg	CMG	4/27/05
Pyrene	EPA 8270	7000	ug/kg	CMG	4/27/05
Benzo [a] Anthracene	EPA 8270	2900	ug/kg	CMG	4/27/05
Chrysene	EPA 8270	4000	ug/kg	CMG	4/27/05
Benzo [b] Fluoranthene	EPA 8270	1600	ug/kg	CMG	4/27/05
Benzo [k] Fluoranthene	EPA 8270	1300	ug/kg	CMG	4/27/05
Benzo [a] Pyrene	EPA 8270	1000	ug/kg	CMG	4/27/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	560	ug/kg	CMG	4/27/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [g,h,i] Perylene	EPA 8270	450	ug/kg	CMG	4/27/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	58.3	% R	CMG	4/27/05
***2-Fluorobiphenyl	EPA 8270	53.3	% R	CMG	4/27/05
***P-Terphenyl-D14	EPA 8270	56.4	% R	CMG	4/27/05
Extraction	EPA 3545	1.0	DF	RJD	4/25/05
MCP METALS					
Silver	EPA 6010B	2.35	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	16.7	mg/kg	AJY	4/25/05
Barium	EPA 6010B	135	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	<0.513	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	14.0	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	19.1	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	1.10	mg/kg	NH	4/25/05
Nickel	EPA 6010B	28.2	mg/kg	AJY	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-201 S-1  
Sample Date: 4/19/2005

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
Lead	EPA 6010B	2740	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	28.4	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 5.12	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 2.56	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	30.6	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	1020	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	90.9	DFS	AJY	4/22/05
PERCENT SOLID		88.6	%	TAJ	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-201 S-3  
 Sample Date: 4/19/2005

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	21000	ug/kg	CMG	4/27/05
2-Methylnaphthalene	EPA 8270	10000	ug/kg	CMG	4/27/05
Acenaphthylene	EPA 8270	< 990	ug/kg	CMG	4/27/05
Acenaphthene	EPA 8270	23000	ug/kg	CMG	4/27/05
Fluorene	EPA 8270	25000	ug/kg	CMG	4/27/05
Phenanthrene	EPA 8270	240000	ug/kg	CMG	4/27/05
Anthracene	EPA 8270	48000	ug/kg	CMG	4/27/05
Fluoranthene	EPA 8270	160000	ug/kg	CMG	4/27/05
Pyrene	EPA 8270	140000	ug/kg	CMG	4/27/05
Benzo [a] Anthracene	EPA 8270	51000	ug/kg	CMG	4/27/05
Chrysene	EPA 8270	52000	ug/kg	CMG	4/27/05
Benzo [b] Fluoranthene	EPA 8270	31000	ug/kg	CMG	4/27/05
Benzo [k] Fluoranthene	EPA 8270	27000	ug/kg	CMG	4/27/05
Benzo [a] Pyrene	EPA 8270	43000	ug/kg	CMG	4/27/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	6800	ug/kg	CMG	4/27/05
Dibenzo [a,h] Anthracene	EPA 8270	2300	ug/kg	CMG	4/27/05
Benzo [g,h,i] Perylene	EPA 8270	3600	ug/kg	CMG	4/27/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	58.1	% R	CMG	4/27/05
***2-Fluorobiphenyl	EPA 8270	42.5	% R	CMG	4/27/05
***P-Terphenyl-D14	EPA 8270	62.9	% R	CMG	4/27/05
Extraction	EPA 3545	1.0	DF	RJD	4/25/05
MCP METALS					
Silver	EPA 6010B	<0.439	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	4.55	mg/kg	AJY	4/25/05
Barium	EPA 6010B	158	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	<0.439	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	<0.439	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	18.6	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.0712	mg/kg	NH	4/25/05
Nickel	EPA 6010B	14.6	mg/kg	AJY	4/25/05
Lead	EPA 6010B	125	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	<2.19	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	<4.38	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	<2.19	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	28.9	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	150	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	71.1	DFS	AJY	4/22/05
PERCENT SOLID		81.0	%	TAJ	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-202 S-1

Sample Date: 4/20/2005

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	1900	ug/kg	CMG	4/27/05
2-Methylnaphthalene	EPA 8270	1200	ug/kg	CMG	4/27/05
Acenaphthylene	EPA 8270	1200	ug/kg	CMG	4/27/05
Acenaphthene	EPA 8270	4600	ug/kg	CMG	4/27/05
Fluorene	EPA 8270	6400	ug/kg	CMG	4/27/05
Phenanthrene	EPA 8270	100000	ug/kg	CMG	4/27/05
Anthracene	EPA 8270	26000	ug/kg	CMG	4/27/05
Fluoranthene	EPA 8270	140000	ug/kg	CMG	4/27/05
Pyrene	EPA 8270	120000	ug/kg	CMG	4/27/05
Benzo [a] Anthracene	EPA 8270	52000	ug/kg	CMG	4/27/05
Chrysene	EPA 8270	53000	ug/kg	CMG	4/27/05
Benzo [b] Fluoranthene	EPA 8270	41000	ug/kg	CMG	4/27/05
Benzo [k] Fluoranthene	EPA 8270	40000	ug/kg	CMG	4/27/05
Benzo [a] Pyrene	EPA 8270	52000	ug/kg	CMG	4/27/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	23000	ug/kg	CMG	4/27/05
Dibenzo [a,h] Anthracene	EPA 8270	5400	ug/kg	CMG	4/27/05
Benzo [g,h,i] Perylene	EPA 8270	17000	ug/kg	CMG	4/27/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	67.8	% R	CMG	4/27/05
***2-Fluorobiphenyl	EPA 8270	47.0	% R	CMG	4/27/05
***P-Terphenyl-D14	EPA 8270	54.5	% R	CMG	4/27/05
Extraction	EPA 3545	1.0	DF	RJD	4/25/05
MCP METALS					
Silver	EPA 6010B	<0.680	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	29.9	mg/kg	AJY	4/25/05
Barium	EPA 6010B	1160	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	<0.680	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	8.14	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	59.6	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.612	mg/kg	NH	4/25/05
Nickel	EPA 6010B	32.2	mg/kg	AJY	4/25/05
Lead	EPA 6010B	1970	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	7.05	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	<6.80	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	<6.80	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	49.7	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	3490	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	96.2	DFS	AJY	4/22/05
PERCENT SOLID		70.7	%	TAJ	4/26/05



GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-202 S-2  
 Sample Date: 4/20/2005

Sample No.: 004

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	4/27/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Phenanthrene	EPA 8270	1500	ug/kg	CMG	4/27/05
Anthracene	EPA 8270	420	ug/kg	CMG	4/27/05
Fluoranthene	EPA 8270	1800	ug/kg	CMG	4/27/05
Pyrene	EPA 8270	1500	ug/kg	CMG	4/27/05
Benzo [a] Anthracene	EPA 8270	690	ug/kg	CMG	4/27/05
Chrysene	EPA 8270	760	ug/kg	CMG	4/27/05
Benzo [b] Fluoranthene	EPA 8270	410	ug/kg	CMG	4/27/05
Benzo [k] Fluoranthene	EPA 8270	390	ug/kg	CMG	4/27/05
Benzo [a] Pyrene	EPA 8270	400	ug/kg	CMG	4/27/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	48.5	% R	CMG	4/27/05
***2-Fluorobiphenyl	EPA 8270	43.4	% R	CMG	4/27/05
***P-Terphenyl-D14	EPA 8270	50.1	% R	CMG	4/27/05
Extraction	EPA 3545	1.0	DF	RJD	4/25/05
MCP METALS					
Silver	EPA 6010B	< 0.580	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	8.24	mg/kg	AJY	4/25/05
Barium	EPA 6010B	388	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	< 0.580	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	1.59	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	19.3	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.115	mg/kg	NH	4/25/05
Nickel	EPA 6010B	12.7	mg/kg	AJY	4/25/05
Lead	EPA 6010B	724	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	< 2.90	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 2.90	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 2.90	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	27.7	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	862	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	91.4	DFS	AJY	4/22/05
PERCENT SOLID		78.8	%	TAJ	4/26/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-203 S-1  
 Sample Date: 4/19/2005

Sample No.: 005

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	4/27/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Phenanthrene	EPA 8270	490	ug/kg	CMG	4/27/05
Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Fluoranthene	EPA 8270	390	ug/kg	CMG	4/27/05
Pyrene	EPA 8270	340	ug/kg	CMG	4/27/05
Benzo [a] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Chrysene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [b] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [k] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [a] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	47.2	% R	CMG	4/27/05
***2-Fluorobiphenyl	EPA 8270	40.0	% R	CMG	4/27/05
***P-Terphenyl-D14	EPA 8270	46.6	% R	CMG	4/27/05
Extraction	EPA 3545	1.0	DF	RJD	4/25/05
MCP METALS					
Silver	EPA 6010B	< 0.641	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	45.9	mg/kg	AJY	4/25/05
Barium	EPA 6010B	719	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	1.76	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	< 0.641	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	19.2	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.433	mg/kg	NH	4/25/05
Nickel	EPA 6010B	18.4	mg/kg	AJY	4/25/05
Lead	EPA 6010B	37.5	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	< 3.21	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 3.21	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 3.21	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	48.6	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	53.8	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	87.1	DFS	AJY	4/22/05
PERCENT SOLID		67.9	%	TAJ	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-203 S-2

Sample Date: 4/19/2005

Sample No.: 006

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	4/27/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Phenanthrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Pyrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [a] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Chrysene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [b] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [k] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [a] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	61.7	% R	CMG	4/27/05
***2-Fluorobiphenyl	EPA 8270	54.2	% R	CMG	4/27/05
***P-Terphenyl-D14	EPA 8270	59.8	% R	CMG	4/27/05
Extraction	EPA 3545	1.0	DF	RJD	4/25/05
MCP METALS					
Silver	EPA 6010B	<0.725	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	2.78	mg/kg	AJY	4/25/05
Barium	EPA 6010B	82.4	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	<0.725	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	<0.725	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	4.02	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	<0.0419	mg/kg	NH	4/25/05
Nickel	EPA 6010B	7.80	mg/kg	AJY	4/25/05
Lead	EPA 6010B	184	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	<3.62	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	<3.62	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	<3.62	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	9.99	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	112	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	95.4	DFS	AJY	4/22/05
PERCENT SOLID		65.8	%	TAJ	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-204 S-1  
 Sample Date: 4/20/2005

Sample No.: 007

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	4/27/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Phenanthrene	EPA 8270	550	ug/kg	CMG	4/27/05
Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Fluoranthene	EPA 8270	670	ug/kg	CMG	4/27/05
Pyrene	EPA 8270	580	ug/kg	CMG	4/27/05
Benzo [a] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Chrysene	EPA 8270	390	ug/kg	CMG	4/27/05
Benzo [b] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [k] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [a] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	4/27/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	52.1	% R	CMG	4/27/05
***2-Fluorobiphenyl	EPA 8270	48.4	% R	CMG	4/27/05
***P-Terphenyl-D14	EPA 8270	52.5	% R	CMG	4/27/05
Extraction	EPA 3545	1.0	DF	RJD	4/25/05
MCP METALS					
Silver	EPA 6010B	< 0.725	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	36.4	mg/kg	AJY	4/25/05
Barium	EPA 6010B	278	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	1.70	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	4.40	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	16.7	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.464	mg/kg	NH	4/25/05
Nickel	EPA 6010B	21.5	mg/kg	AJY	4/25/05
Lead	EPA 6010B	568	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	5.60	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	3.82	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 3.63	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	46.2	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	1090	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	96.9	DFS	AJY	4/22/05
PERCENT SOLID		66.8	%	TAJ	4/26/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-204 S-2  
 Sample Date: 4/20/2005

Sample No.: 008

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	650	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	420	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	500	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	560	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	680	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	9300	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	1900	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	11000	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	9100	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	2900	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	5900	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	1900	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	1700	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	1300	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	880	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	780	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	64.0	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	51.0	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	46.2	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	< 0.595	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	29.3	mg/kg	AJY	4/25/05
Barium	EPA 6010B	4160	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	< 0.595	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	8.27	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	468	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	2.40	mg/kg	NH	4/25/05
Nickel	EPA 6010B	63.7	mg/kg	AJY	4/25/05
Lead	EPA 6010B	9530	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	6.05	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	4.96	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 2.98	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	32.4	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	11700	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	83.3	DFS	AJY	4/22/05
PERCENT SOLID		70.0	%	TAJ	4/26/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-205 S-1

Sample Date: 4/19/2005

Sample No.: 009

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	470	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	500	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	3500	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	980	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	3900	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	3800	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	1300	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	2300	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	960	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	1000	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	640	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	550	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	480	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	60.9	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	56.7	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	64.0	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	0.792	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	27.9	mg/kg	AJY	4/25/05
Barium	EPA 6010B	325	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	< 0.528	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	19.6	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	76.0	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	1.19	mg/kg	NH	4/25/05
Nickel	EPA 6010B	48.6	mg/kg	AJY	4/25/05
Lead	EPA 6010B	14300	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	40.7	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 5.28	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 5.28	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	84.7	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	4740	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	79.7	DFS	AJY	4/22/05
PERCENT SOLID		75.5	%	TAJ	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-205 S-3

Sample Date: 4/19/2005

Sample No.: 010

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	5200	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	3700	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	3600	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	12000	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	16000	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	130000	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	29000	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	93000	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	70000	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	26000	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	36000	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	13000	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	13000	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	12000	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	4000	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	1300	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	2900	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	68.6	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	51.8	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	56.8	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	<0.555	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	10.4	mg/kg	AJY	4/25/05
Barium	EPA 6010B	49.2	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	<0.555	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	2.90	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	8.61	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	1.01	mg/kg	NH	4/25/05
Nickel	EPA 6010B	6.30	mg/kg	AJY	4/25/05
Lead	EPA 6010B	558	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	55.8	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	<2.78	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	<2.78	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	9.81	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	560	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	82.1	DFS	AJY	4/22/05
PERCENT SOLID		73.9	%	TAJ	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-206 S-1

Sample Date: 4/20/2005

Sample No.: 011

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	350	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	3300	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	780	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	3900	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	3500	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	1400	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	2100	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	870	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	820	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	760	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	55.4	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	45.9	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	57.0	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	< 0.397	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	7.67	mg/kg	AJY	4/25/05
Barium	EPA 6010B	154	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	< 0.397	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	1.13	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	30.4	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.539	mg/kg	NH	4/25/05
Nickel	EPA 6010B	25.9	mg/kg	AJY	4/25/05
Lead	EPA 6010B	470	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	< 1.98	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 1.98	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 1.98	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	37.4	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	296	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	69.6	DFS	AJY	4/22/05
PERCENT SOLID		87.7	%	TAJ	4/26/05



GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-206 S-3

Sample Date: 4/20/2005

Sample No.: 012

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	2000	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	500	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	2600	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	2300	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	850	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	1500	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	700	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	640	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	560	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	52.6	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	45.3	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	52.2	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	< 0.515	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	6.67	mg/kg	AJY	4/25/05
Barium	EPA 6010B	123	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	< 0.515	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	< 0.515	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	29.1	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.136	mg/kg	NH	4/25/05
Nickel	EPA 6010B	25.3	mg/kg	AJY	4/25/05
Lead	EPA 6010B	265	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	< 2.57	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 2.57	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 2.57	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	31.0	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	186	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	84.5	DFS	AJY	4/22/05
PERCENT SOLID		82.1	%	TAJ	4/26/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-207 S-1  
 Sample Date: 4/19/2005

Sample No.: 013

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	4000	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	1100	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	5900	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	5000	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	2200	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	2800	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	1700	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	1500	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	1500	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	510	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	390	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	60.1	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	55.5	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	60.3	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	< 0.535	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	7.17	mg/kg	AJY	4/25/05
Barium	EPA 6010B	92.1	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	< 0.535	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	< 0.535	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	20.6	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.846	mg/kg	NH	4/25/05
Nickel	EPA 6010B	18.4	mg/kg	AJY	4/25/05
Lead	EPA 6010B	272	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	< 2.68	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 2.68	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 2.68	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	39.1	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	178	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	91.1	DFS	AJY	4/22/05
PERCENT SOLID		85.1	%	TAJ	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-207 S-2

Sample Date: 4/19/2005

Sample No.: 014

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	1800	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	1600	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	760	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	1100	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	750	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	680	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	630	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	53.4	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	45.9	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	49.9	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	< 0.466	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	7.60	mg/kg	AJY	4/25/05
Barium	EPA 6010B	104	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	< 0.466	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	< 0.466	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	29.4	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.356	mg/kg	NH	4/25/05
Nickel	EPA 6010B	22.3	mg/kg	AJY	4/25/05
Lead	EPA 6010B	381	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	< 2.33	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 2.33	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 2.33	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	41.2	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	206	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	83.3	DFS	AJY	4/22/05
PERCENT SOLID		89.3	%	TAJ	4/25/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-208 S-1

Sample Date: 4/20/2005

Sample No.: 015

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	340	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	410	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	<330	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	<330	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	<330	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	1300	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	<330	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	1600	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	1600	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	590	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	1100	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	500	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	430	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	380	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	<330	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	<330	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	<330	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	37.7	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	32.0	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	32.7	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	<0.597	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	8.37	mg/kg	AJY	4/25/05
Barium	EPA 6010B	76.9	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	<0.597	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	<0.597	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	14.2	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.330	mg/kg	NH	4/25/05
Nickel	EPA 6010B	13.4	mg/kg	AJY	4/25/05
Lead	EPA 6010B	855	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	<2.98	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	<2.98	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	<2.98	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	34.4	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	105	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	97.3	DFS	AJY	4/22/05
PERCENT SOLID		81.5	%	TAJ	4/26/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0504-00158

Sample ID: B-208 S-2

Sample Date: 4/20/2005

Sample No.: 016

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	690	ug/kg	CMG	4/28/05
2-Methylnaphthalene	EPA 8270	1100	ug/kg	CMG	4/28/05
Acenaphthylene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Acenaphthene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Fluorene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Phenanthrene	EPA 8270	720	ug/kg	CMG	4/28/05
Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Fluoranthene	EPA 8270	380	ug/kg	CMG	4/28/05
Pyrene	EPA 8270	370	ug/kg	CMG	4/28/05
Benzo [a] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Chrysene	EPA 8270	440	ug/kg	CMG	4/28/05
Benzo [b] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [k] Fluoranthene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [a] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Dibenzo [a,h] Anthracene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Benzo [g,h,i] Perylene	EPA 8270	< 330	ug/kg	CMG	4/28/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	59.8	% R	CMG	4/28/05
***2-Fluorobiphenyl	EPA 8270	51.7	% R	CMG	4/28/05
***P-Terphenyl-D14	EPA 8270	53.8	% R	CMG	4/28/05
Extraction	EPA 3545	1.0	DF	RJD	4/26/05
MCP METALS					
Silver	EPA 6010B	0.706	mg/kg	AJY	4/25/05
Arsenic	EPA 6010B	12.9	mg/kg	AJY	4/25/05
Barium	EPA 6010B	67.6	mg/kg	AJY	4/25/05
Beryllium	EPA 6010B	< 0.490	mg/kg	AJY	4/25/05
Cadmium	EPA 6010B	2.31	mg/kg	AJY	4/25/05
Chromium	EPA 6010B	11.4	mg/kg	AJY	4/25/05
Mercury	EPA 7471A	0.0709	mg/kg	NH	4/25/05
Nickel	EPA 6010B	12.8	mg/kg	AJY	4/25/05
Lead	EPA 6010B	405	mg/kg	AJY	4/25/05
Antimony	EPA 6010B	< 2.45	mg/kg	AJY	4/25/05
Selenium	EPA 6010B	< 2.45	mg/kg	AJY	4/25/05
Thallium	EPA 6010B	< 2.45	mg/kg	AJY	4/25/05
Vanadium	EPA 6010B	21.6	mg/kg	AJY	4/25/05
Zinc	EPA 6010B	222	mg/kg	AJY	4/25/05
Metals Preparation	EPA 3051	83.6	DFS	AJY	4/22/05
PERCENT SOLID		85.3	%	TAJ	4/26/05

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 6010B ANALYSIS**  
**Metals by ICP**

**QUALITY CONTROL - SOLID**

**DATE PREPARED: 04/22/2005 B**

QC Sample	Method Blank	Lab Control Sample
Units	mg/kg	% Recovery
Acceptance Limits	Results	80-120%
<b>Analyte</b>		
Silver (Ag)	<0.500	85.7
Aluminum (Al)	NA	NA
Arsenic (As)	<1.000	89.7
Boron (B)	NA	NA
Barium (Ba)	<0.500	94.4
Beryllium (Be)	<0.500	93.0
Calcium (Ca)	NA	NA
Cadmium (Cd)	<0.500	93.4
Cobalt (Co)	NA	NA
Chromium (Cr)	<0.500	94.6
Copper (Cu)	NA	NA
Iron (Fe)	NA	NA
Magnesium (Mg)	NA	NA
Manganese (Mn)	NA	NA
Molybdenum (Mo)	NA	NA
Nickel (Ni)	<1.000	93.2
Lead (Pb)	<1.000	105
Antimony (Sb)	<2.500	90.6
Selenium (Se)	<2.500	87.1
Strontium (Sr)	NA	NA
Titanium (Ti)	NA	NA
Thallium (Tl)	<2.500	92.9
Vanadium (V)	<0.500	92.7
Zinc (Zn)	<1.000	108

Matrix Spike / Duplicate Spike performed as per method and  
reported if assigned on Chain of Custody.

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 7470/7471 ANALYSIS**  
**Mercury by Cold Vapor Atomic Absorption**

**QUALITY CONTROL - SOLID**

**Date Analyzed: 04/25/2005**

QC Sample	Method Blank	Lab Control Sample
Units	mg/L	% Recovery
Acceptance Limits	Results	85-115 %
<b>Analyte</b>		
Mercury (Hg)	<0.040 (solid)	96.0

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.

EPA Method 8270 Solid Method Blank (MB) and Laboratory Control Sample (LCS) Data

Method Blank

Date Extracted:	04/25/05	
Date Analyzed:	04/26/05	
File Name:	V7541	
Semii-Volatile Organics	Result	Reporting Limit
n-nitrosodimethylamine	ND	330
pyridine	ND	3300
phenol	ND	330
bis(2-chloroethyl)ether	ND	330
2-chlorophenol	ND	330
1,3-dichlorobenzene	ND	330
1,4-dichlorobenzene	ND	330
benzyl alcohol	ND	660
1,2-dichlorobenzene	ND	330
2-methylphenol	ND	330
bis(2-chloroisopropyl)ether	ND	330
3&4-methylphenol	ND	330
n-nitrosodi-n-propylamine	ND	330
hexachloroethane	ND	330
nitrobenzene	ND	330
isophrone	ND	330
2-nitrophenol	ND	330
2,4-dimethylphenol	ND	330
benzoic acid	ND	330
bis(2-chloroethoxy)methane	ND	330
2,4-dichlorophenol	ND	330
1,2,4-trichlorobenzene	ND	330
napthalene	ND	330
4-chloroaniline	ND	660
hexachlorobutadiene	ND	330
4-chloro-3-methylphenol	ND	660
2-methylnapthalene	ND	330
aniline	ND	330
hexachlorocyclopentadiene	ND	1700
2,4,6-trichlorophenol	ND	330
2,4,5-trichlorophenol	ND	330
2-chloronapthalene	ND	330
2-nitroaniline	ND	1700
dimethylphthalate	ND	330
acenaphylene	ND	330
2,6-dinitrotoluene	ND	330
3-nitroaniline	ND	1700
acenaphthene	ND	330
2,4-dinitrophenol	ND	3300
dibenzofuran	ND	330
4-nitrophenol	ND	1700
2,4-dinitrotoluene	ND	330
diethylphthalate	ND	330
fluorene	ND	330
4-chlorophenyl phenyl ether	ND	330
4-nitroaniline	ND	660
4,6-dinitro-2-methylphenol	ND	1700
n-nitrosodiphenylamine	ND	330
4-bromophenyl phenyl ether	ND	330
hexachlorobenzene	ND	330
pentachlorophenol	ND	1700
phenanthrene	ND	330
anthracene	ND	330
carbazole	ND	330
di-n-butylphthalate	ND	500
fluoranthene	ND	330
benzidine	ND	330
pyrene	ND	330
butylbenzylphthalate	ND	330
benz [a] anthracene	ND	330
3,3'-dichlorobenzidine	ND	660
chrysene	ND	330
bis(2-ethylhexyl)phthalate	ND	330
di-n-octylphthalate	ND	330
benzo [b] fluoranthene	ND	330
benzo [k] fluoranthene	ND	330
benzo [a] pyrene	ND	330
indeno [1,2,3-cd] pyrene	ND	330
dibenz [a,h] anthracene	ND	330
benzo [ghi] perylene	ND	330

Surrogates:	Recovery (%)	Acceptance Limits
2-FLUOROPHENOL	75.7	30-130
PHENOL-D6	77.6	30-130
NITROBENZENE-D5	79.1	30-130
2-FLUOROBIPHENYL	73.1	30-130
2,4,6-TRIBROMOPHENOL	93.7	30-130
p-TERPHENYL-D14	91.9	30-130



EPA Method 8270 Solid Method Blank (MB) and Laboratory Control Sample (LCS) Data

Laboratory Control Sample

Date Extracted:	04/25/05		
Date Analyzed:	04/26/05		
File Name:	V7542		
Spike Concentration = 20ug/L	% Recovery	Acceptance Limits	Verdict
n-nitrosodimethylamine	119	40-140	ok
pyridine	105	40-140	ok
phenol	96.2	30-130	ok
bis(2-chloroethyl)ether	78.8	40-140	ok
2-chlorophenol	93.9	30-130	ok
1,3-dichlorobenzene	84.2	40-140	ok
1,4-dichlorobenzene	83.3	40-140	ok
benzyl alcohol	94.9	40-140	ok
1,2-dichlorobenzene	80.8	40-140	ok
2-methylphenol	94.2	30-130	ok
bis(2-chloroisopropyl)ether	104	40-140	ok
3,4-methylphenol	181	30-130	out
n-nitrosodi-n-propylamine	113	40-140	ok
hexachloroethane	97.0	40-140	ok
nitrobenzene	101	40-140	ok
isophrone	107	40-140	ok
2-nitrophenol	86.7	30-130	ok
2,4-dimethylphenol	90.1	30-130	ok
benzoic acid	49.8	30-130	ok
bis(2-chloroethoxy)methane	108	40-140	ok
2,4-dichlorophenol	89.5	30-130	ok
1,2,4-trichlorobenzene	81.1	40-140	ok
naphthalene	86.7	40-140	ok
4-chloroaniline	57.2	40-140	ok
hexachlorobutadiene	97.2	40-140	ok
4-chloro-3-methylphenol	108	30-130	ok
2-methylnaphthalene	93.6	40-140	ok
aniline	79.3	40-140	ok
hexachlorocyclopentadiene	148	40-140	out
2,4,6-trichlorophenol	89.8	30-130	ok
2,4,5-trichlorophenol	96.4	30-130	ok
2-chloronaphthalene	89.4	40-140	ok
2-nitroaniline	117	40-140	ok
dimethylphthalate	102	40-140	ok
acenaphthylene	87.7	40-140	ok
2,6-dinitrotoluene	97.6	40-140	ok
3-nitroaniline	103	40-140	ok
acenaphthene	82.6	40-140	ok
2,4-dinitrophenol	72.9	30-130	ok
dibenzofuran	88.8	40-140	ok
4-nitrophenol	140	30-130	out
2,4-dinitrotoluene	94.2	40-140	ok
diethylphthalate	111	40-140	ok
fluorene	81.0	40-140	ok
4-chlorophenyl phenyl ether	86.0	40-140	ok
4-nitroaniline	144	40-140	out
4,6-dinitro-2-methylphenol	83.2	30-130	ok
n-nitrosodiphenylamine	104	40-140	ok
4-bromophenyl phenyl ether	94.8	40-140	ok
hexachlorobenzene	93.5	40-140	ok
pentachlorophenol	98.1	30-130	ok
phenanthrene	90.0	40-140	ok
anthracene	90.7	40-140	ok
carbazole	130	40-140	ok
di-n-butylphthalate	145	40-140	out
fluoranthene	91.7	40-140	ok
benzidine	0.00	40-140	out
pyrene	95.3	40-140	ok
butylbenzylphthalate	112	40-140	ok
benz [a] anthracene	94.6	40-140	ok
3,3'-dichlorobenzidine	110	40-140	ok
chrysene	88.8	40-140	ok
bis(2-ethylhexyl)phthalate	99.7	40-140	ok
di-n-octylphthalate	111	40-140	ok
benzo [b] fluoranthene	90.0	40-140	ok
benzo [k] fluoranthene	93.0	40-140	ok
benzo [a] pyrene	92.9	40-140	ok
indeno [1,2,3-cd] pyrene	96.8	40-140	ok
dibenz [a,h] anthracene	97.8	40-140	ok
benzo [ghi] perylene	102	40-140	ok

CAM criteria allows 15% of analytes to exceed criteria.

Surrogates:	Recovery (%)	Acceptance Limits	Verdict
2-FLUOROPHENOL	94.6	30-130	ok
PHENOL-D6	89.7	30-130	ok
NITROBENZENE-D5	96.4	30-130	ok
2-FLUOROBIPHENYL	86.6	30-130	ok
2,4,6-TRIBROMOPHENOL	100	30-130	ok
p-TERPHENYL-D14	108	30-130	ok

EPA Method 8270 Solid Method Blank (MB) and Laboratory Control Sample (LCS) Data

Method Blank

Date Extracted:	04/26/05	
Date Analyzed:	04/27/05	
File Name:	V7563	
Semii-Volatile Organics	Result	Reporting Limit
n-nitrosodimethylamine	ND	330
pyridine	ND	3300
phenol	ND	330
bis(2-chloroethyl)ether	ND	330
2-chlorophenol	ND	330
1,3-dichlorobenzene	ND	330
1,4-dichlorobenzene	ND	330
benzyl alcohol	ND	660
1,2-dichlorobenzene	ND	330
2-methylphenol	ND	330
bis(2-chloroisopropyl)ether	ND	330
3&4-methylphenol	ND	330
n-nitrosodi-n-propylamine	ND	330
hexachloroethane	ND	330
nitrobenzene	ND	330
isophrone	ND	330
2-nitrophenol	ND	330
2,4-dimethylphenol	ND	330
benzoic acid	ND	330
bis(2-chloroethoxy)methane	ND	330
2,4-dichlorophenol	ND	330
1,2,4-trichlorobenzene	ND	330
naphthalene	ND	330
4-chloroaniline	ND	660
hexachlorobutadiene	ND	330
4-chloro-3-methylphenol	ND	660
2-methylnaphthalene	ND	330
aniline	ND	330
hexachlorocyclopentadiene	ND	1700
2,4,6-trichlorophenol	ND	330
2,4,5-trichlorophenol	ND	330
2-chloronaphthalene	ND	330
2-nitroaniline	ND	1700
dimethylphthalate	ND	330
acenaphthylene	ND	330
2,6-dinitrotoluene	ND	330
3-nitroaniline	ND	1700
acenaphthene	ND	330
2,4-dinitrophenol	ND	3300
dibenzofuran	ND	330
4-nitrophenol	ND	1700
2,4-dinitrotoluene	ND	330
diethylphthalate	ND	330
fluorene	ND	330
4-chlorophenyl phenyl ether	ND	330
4-nitroaniline	ND	660
4,6-dinitro-2-methylphenol	ND	1700
n-nitrosodiphenylamine	ND	330
4-bromophenyl phenyl ether	ND	330
hexachlorobenzene	ND	330
pentachlorophenol	ND	1700
phenanthrene	ND	330
anthracene	ND	330
carbazole	ND	330
di-n-butylphthalate	ND	500
fluoranthene	ND	330
benzidine	ND	330
pyrene	ND	330
butylbenzylphthalate	ND	330
benz [a] anthracene	ND	330
3,3'-dichlorobenzidine	ND	660
chrysene	ND	330
bis(2-ethylhexyl)phthalate	ND	330
di-n-octylphthalate	ND	330
benzo [b] fluoranthene	ND	330
benzo [k] fluoranthene	ND	330
benzo [a] pyrene	ND	330
indeno [1,2,3-cd] pyrene	ND	330
dibenz [a,h] anthracene	ND	330
benzo [ghi] perylene	ND	330

Surrogates:	Recovery (%)	Acceptance Limits
2-FLUOROPHENOL	69.7	30-130
PHENOL-D6	72.9	30-130
NITROBENZENE-D5	72.2	30-130
2-FLUOROBIPHENYL	63.4	30-130
2,4,6-TRIBROMOPHENOL	82.4	30-130
p-TERPHENYL-D14	81.1	30-130

EPA Method 8270 Solid Method Blank (MB) and Laboratory Control Sample (LCS) Data

Laboratory Control Sample

Date Extracted:	04/26/05		
Date Analyzed:	04/27/05		
File Name:	V7564		
Spike Concentration = 20ug/L	% Recovery	Acceptance Limits	Verdict
n-nitrosodimethylamine	93.2	40-140	ok
pyridine	103	40-140	ok
phenol	86.5	30-130	ok
bis(2-chloroethyl)ether	82.2	40-140	ok
2-chlorophenol	87.8	30-130	ok
1,3-dichlorobenzene	76.0	40-140	ok
1,4-dichlorobenzene	77.9	40-140	ok
benzyl alcohol	90.2	40-140	ok
1,2-dichlorobenzene	77.1	40-140	ok
2-methylphenol	89.3	30-130	ok
bis(2-chloroisopropyl)ether	86.3	40-140	ok
3&4-methylphenol	158	30-130	out
n-nitrosodi-n-propylamine	99.0	40-140	ok
hexachloroethane	80.4	40-140	ok
nitrobenzene	91.4	40-140	ok
isophrone	100.0	40-140	ok
2-nitrophenol	88.9	30-130	ok
2,4-dimethylphenol	85.8	30-130	ok
benzoic acid	15.6	30-130	out
bis(2-chloroethoxy)methane	95.7	40-140	ok
2,4-dichlorophenol	82.2	30-130	ok
1,2,4-trichlorobenzene	77.2	40-140	ok
naphthalene	83.6	40-140	ok
4-chloroaniline	92.0	40-140	ok
hexachlorobutadiene	83.8	40-140	ok
4-chloro-3-methylphenol	105	30-130	ok
2-methylnaphthalene	89.0	40-140	ok
aniline	85.6	40-140	ok
hexachlorocyclopentadiene	109	40-140	ok
2,4,6-trichlorophenol	90.9	30-130	ok
2,4,5-trichlorophenol	94.2	30-130	ok
2-chloronaphthalene	86.6	40-140	ok
2-nitroaniline	100	40-140	ok
dimethylphthalate	95.0	40-140	ok
acenaphthylene	86.6	40-140	ok
2,6-dinitrotoluene	92.3	40-140	ok
3-nitroaniline	99.0	40-140	ok
acenaphthene	81.3	40-140	ok
2,4-dinitrophenol	46.1	30-130	ok
dibenzofuran	87.7	40-140	ok
4-nitrophenol	114	30-130	ok
2,4-dinitrotoluene	93.0	40-140	ok
diethylphthalate	101	40-140	ok
fluorene	81.7	40-140	ok
4-chlorophenyl phenyl ether	86.3	40-140	ok
4-nitroaniline	157	40-140	out
4,6-dinitro-2-methylphenol	79.4	30-130	ok
n-nitrosodiphenylamine	104	40-140	ok
4-bromophenyl phenyl ether	88.7	40-140	ok
hexachlorobenzene	87.9	40-140	ok
pentachlorophenol	88.5	30-130	ok
phenanthrene	82.1	40-140	ok
anthracene	83.8	40-140	ok
carbazole	128	40-140	ok
di-n-butylphthalate	135	40-140	ok
fluoranthene	80.8	40-140	ok
benzidine	0.00	40-140	out
pyrene	83.8	40-140	ok
butylbenzylphthalate	96.7	40-140	ok
benz [a] anthracene	84.4	40-140	ok
3,3'-dichlorobenzidine	112	40-140	ok
chrysene	79.3	40-140	ok
bis(2-ethylhexyl)phthalate	92.6	40-140	ok
di-n-octylphthalate	96.1	40-140	ok
benzo [b] fluoranthene	81.1	40-140	ok
benzo [k] fluoranthene	81.3	40-140	ok
benzo [a] pyrene	80.6	40-140	ok
indeno [1,2,3-cd] pyrene	87.8	40-140	ok
dibenz [a,h] anthracene	90.9	40-140	ok
benzo [ghi] perylene	86.9	40-140	ok

CAM criteria allows 15% of analytes to exceed criteria.

Surrogates:	Recovery (%)	Acceptance Limits	Verdict
2-FLUOROPHENOL	87.9	30-130	ok
PHENOL-D6	87.4	30-130	ok
NITROBENZENE-D5	81.8	30-130	ok
2-FLUOROBIPHENYL	83.9	30-130	ok
2,4,6-TRIBROMOPHENOL	93.8	30-130	ok
p-TERPHENYL-D14	92.6	30-130	ok





## **Soil Analyses**

**0506-00018 – 06/02/05**

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA and ME: MA092 NH: 2028  
CT: PH0579 RI: LAO00236  
NELAC - NYS DOH: 11063

**A N A L Y T I C A L   D A T A   R E P O R T**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffery Hardin

Project No.: 08.0018237.00  
Work Order No.: 0506-00018  
Date Received: 6/02/05  
Date Reported: 6/09/05

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
6/02/2005	Solid	0506-00018 001	1-1
6/02/2005	Solid	0506-00018 002	2-1
6/02/2005	Solid	0506-00018 003	4-1
6/02/2005	Solid	0506-00018 004	4-2
6/02/2005	Solid	0506-00018 005	5-1
6/02/2005	Solid	0506-00018 006	5-2

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 6/09/05  
Work Order No.: 0506-00018

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### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 06/02/05 via    GZA courier,    EC,    FEDEX, or   x   hand delivered.  
The temperature of the    temperature blank/   x   cooler air, was 0.1 degrees C. The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

#### 2. EPA Method 6010B/7471A - Metals

Attach QC Mercury 06/03/05 - Solid  
Attach QC 6010B 06/03/05 - Solid

#### 3. MADEP EPH

\* The diluted out surrogate recoveries are due to co-elution with a petroleum constituent.

Attach QC EPH 06/06/05 - Solid

Were any significant modifications made to the VPH or EPH methods?      ( ) Yes    ( x ) No



GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

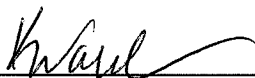
Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 6/09/05  
Work Order No.: 0506-00018

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Data Authorized By: \_\_\_\_\_



% R = % Recovery  
DF = Dilution Factor  
DFS = Dilution Factor Solids  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.

Method 8021: The current version of the method is 8021B.

Method 8270: The current version of the method is 8270C.

Method 6010: The current version of the method is 6010B.

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 6/09/05  
Work Order No.: 0506-00018

Sample ID: 1-1  
Sample Date: 6/02/2005

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
<b>EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)</b>					
Unadjusted C11-C22 Aromatic Fraction	MADEP	630	mg/kg	RJD	6/08/05
C9-C18 Aliphatic Fraction	MADEP	1200	mg/kg	RJD	6/08/05
C19-C36 Aliphatic Fraction	MADEP	180	mg/kg	RJD	6/08/05
C11-C22 Aromatics (excludes target PAHs)	MADEP	600	mg/kg	RJD	6/08/05
Surrogates:	MADEP				
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	51.5	%R	RJD	6/08/05
***p-Terphenyl (aromatic): 40-135%R	MADEP	60.7	%R	RJD	6/08/05
***2-Bromonaphthalene (aromatic)	MADEP	D.O.	* %R	RJD	6/08/05
<b>TARGETED PAH ANALYTES</b>					
Naphthalene (Diesel PAH)	MADEP	1.4	mg/kg	RJD	6/08/05
2-Methylnaphthalene (Diesel PAH)	MADEP	3.5	mg/kg	RJD	6/08/05
Acenaphthylene (Diesel PAH)	MADEP	4.2	mg/kg	RJD	6/08/05
Acenaphthene (Diesel PAH)	MADEP	3.4	mg/kg	RJD	6/08/05
Fluorene	MADEP	3.6	mg/kg	RJD	6/08/05
Phenanthrene (Diesel PAH)	MADEP	6.5	mg/kg	RJD	6/08/05
Anthracene	MADEP	3.6	mg/kg	RJD	6/08/05
Fluoranthene	MADEP	<0.60	mg/kg	RJD	6/08/05
Pyrene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [a] Anthracene	MADEP	<0.60	mg/kg	RJD	6/08/05
Chrysene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [b] Fluoranthene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [k] Fluoranthene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [a] Pyrene	MADEP	<0.60	mg/kg	RJD	6/08/05
Indeno [1,2,3-cd] Pyrene	MADEP	<0.60	mg/kg	RJD	6/08/05
Dibenzo [a,h] Anthracene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [g,h,i] Perylene	MADEP	<0.60	mg/kg	RJD	6/08/05
Extraction	EPA 3545	2.0	DF	RJD	6/06/05
PERCENT SOLID		83.0	%	TAJ	6/03/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0506-00018

Sample ID: 2-1  
 Sample Date: 6/02/2005

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)					
Unadjusted C11-C22 Aromatic Fraction	MADEP	1200	mg/kg	RJD	6/08/05
C9-C18 Aliphatic Fraction	MADEP	1900	mg/kg	RJD	6/08/05
C19-C36 Aliphatic Fraction	MADEP	270	mg/kg	RJD	6/08/05
C11-C22 Aromatics (excludes target PAHs)	MADEP	1100	mg/kg	RJD	6/08/05
Surrogates:	MADEP				
***1-Chlorooctadecane (aliphatic): 40-116%R	MADEP	55.1	%R	RJD	6/08/05
***p-Terphenyl (aromatic): 40-135%R	MADEP	70.5	%R	RJD	6/08/05
***2-Bromonaphthalene (aromatic)	MADEP	D.O.	* %R	RJD	6/08/05
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	3.1	mg/kg	RJD	6/08/05
2-Methylnaphthalene (Diesel PAH)	MADEP	3.0	mg/kg	RJD	6/08/05
Acenaphthylene (Diesel PAH)	MADEP	8.0	mg/kg	RJD	6/08/05
Acenaphthene (Diesel PAH)	MADEP	5.3	mg/kg	RJD	6/08/05
Fluorene	MADEP	11	mg/kg	RJD	6/08/05
Phenanthrene (Diesel PAH)	MADEP	8.7	mg/kg	RJD	6/08/05
Anthracene	MADEP	4.1	mg/kg	RJD	6/08/05
Fluoranthene	MADEP	<0.60	mg/kg	RJD	6/08/05
Pyrene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [a] Anthracene	MADEP	<0.60	mg/kg	RJD	6/08/05
Chrysene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [b] Fluoranthene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [k] Fluoranthene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [a] Pyrene	MADEP	<0.60	mg/kg	RJD	6/08/05
Indeno [1,2,3-cd] Pyrene	MADEP	<0.60	mg/kg	RJD	6/08/05
Dibenzo [a,h] Anthracene	MADEP	<0.60	mg/kg	RJD	6/08/05
Benzo [g,h,i] Perylene	MADEP	<0.60	mg/kg	RJD	6/08/05
Extraction	EPA 3545	2.0	DF	RJD	6/06/05
PERCENT SOLID		86.0	%	TAJ	6/03/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0506-00018

Sample ID: 4-1  
 Sample Date: 6/02/2005

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
PERCENT SOLID		65.6	%	TAJ	6/03/05
MCP METALS				AJY	6/06/05
Silver	EPA 6010B	<0.762	mg/kg	AJY	6/06/05
Arsenic	EPA 6010B	45.2	mg/kg	AJY	6/06/05
Barium	EPA 6010B	676	mg/kg	AJY	6/06/05
Beryllium	EPA 6010B	2.64	mg/kg	AJY	6/06/05
Cadmium	EPA 6010B	0.991	mg/kg	AJY	6/06/05
Chromium	EPA 6010B	24.8	mg/kg	AJY	6/06/05
Mercury	EPA 7471A	0.331	mg/kg	NH	6/03/05
Nickel	EPA 6010B	32.3	mg/kg	AJY	6/06/05
Lead	EPA 6010B	26.6	mg/kg	AJY	6/06/05
Antimony	EPA 6010B	<3.81	mg/kg	AJY	6/06/05
Selenium	EPA 6010B	<3.81	mg/kg	AJY	6/06/05
Thallium	EPA 6010B	<3.81	mg/kg	AJY	6/06/05
Vanadium	EPA 6010B	52.6	mg/kg	AJY	6/06/05
Zinc	EPA 6010B	414	mg/kg	AJY	6/06/05
Metals Preparation	EPA 3051	100	DFS	AJY	6/03/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0506-00018

Sample ID: 4-2  
 Sample Date: 6/02/2005

Sample No.: 004

Test Performed	Method	Results	Units	Tech	Analysis Date
PERCENT SOLID		74.0	%	TAJ	6/03/05
MCP METALS				AJY	6/06/05
Silver	EPA 6010B	<0.386	mg/kg	AJY	6/06/05
Arsenic	EPA 6010B	6.17	mg/kg	AJY	6/06/05
Barium	EPA 6010B	127	mg/kg	AJY	6/06/05
Beryllium	EPA 6010B	<0.386	mg/kg	AJY	6/06/05
Cadmium	EPA 6010B	4.48	mg/kg	AJY	6/06/05
Chromium	EPA 6010B	17.8	mg/kg	AJY	6/06/05
Mercury	EPA 7471A	0.145	mg/kg	NH	6/03/05
Nickel	EPA 6010B	19.7	mg/kg	AJY	6/06/05
Lead	EPA 6010B	1470	mg/kg	AJY	6/06/05
Antimony	EPA 6010B	<1.93	mg/kg	AJY	6/06/05
Selenium	EPA 6010B	<1.93	mg/kg	AJY	6/06/05
Thallium	EPA 6010B	<1.93	mg/kg	AJY	6/06/05
Vanadium	EPA 6010B	27.7	mg/kg	AJY	6/06/05
Zinc	EPA 6010B	1400	mg/kg	AJY	6/06/05
Metals Preparation	EPA 3051	57.2	DFS	AJY	6/03/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0506-00018

Sample ID: 5-1  
 Sample Date: 6/02/2005

Sample No.: 005

Test Performed	Method	Results	Units	Tech	Analysis Date
PERCENT SOLID		80.4	%	TAJ	6/03/05
MCP METALS				AJY	6/06/05
Silver	EPA 6010B	<0.603	mg/kg	AJY	6/06/05
Arsenic	EPA 6010B	21.9	mg/kg	AJY	6/06/05
Barium	EPA 6010B	158	mg/kg	AJY	6/06/05
Beryllium	EPA 6010B	<0.603	mg/kg	AJY	6/06/05
Cadmium	EPA 6010B	1.75	mg/kg	AJY	6/06/05
Chromium	EPA 6010B	19.2	mg/kg	AJY	6/06/05
Mercury	EPA 7471A	0.288	mg/kg	NH	6/03/05
Nickel	EPA 6010B	21.8	mg/kg	AJY	6/06/05
Lead	EPA 6010B	14500	mg/kg	AJY	6/06/05
Antimony	EPA 6010B	74.5	mg/kg	AJY	6/06/05
Selenium	EPA 6010B	<3.01	mg/kg	AJY	6/06/05
Thallium	EPA 6010B	<3.01	mg/kg	AJY	6/06/05
Vanadium	EPA 6010B	28.7	mg/kg	AJY	6/06/05
Zinc	EPA 6010B	593	mg/kg	AJY	6/06/05
Metals Preparation	EPA 3051	96.9	DFS	AJY	6/03/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0506-00018

Sample ID: 5-2  
 Sample Date: 6/02/2005

Sample No.: 006

Test Performed	Method	Results	Units	Tech	Analysis Date
PERCENT SOLID		77.4	%	TAJ	6/03/05
MCP METALS				AJY	6/06/05
Silver	EPA 6010B	28.4	mg/kg	AJY	6/06/05
Arsenic	EPA 6010B	29.2	mg/kg	AJY	6/06/05
Barium	EPA 6010B	304	mg/kg	AJY	6/06/05
Beryllium	EPA 6010B	1.12	mg/kg	AJY	6/06/05
Cadmium	EPA 6010B	3.94	mg/kg	AJY	6/06/05
Chromium	EPA 6010B	34.6	mg/kg	AJY	6/06/05
Mercury	EPA 7471A	0.371	mg/kg	NH	6/03/05
Nickel	EPA 6010B	60.2	mg/kg	AJY	6/06/05
Lead	EPA 6010B	84800	mg/kg	AJY	6/06/05
Antimony	EPA 6010B	58.6	mg/kg	AJY	6/06/05
Selenium	EPA 6010B	<2.83	mg/kg	AJY	6/06/05
Thallium	EPA 6010B	3.92	mg/kg	AJY	6/06/05
Vanadium	EPA 6010B	18.8	mg/kg	AJY	6/06/05
Zinc	EPA 6010B	1020	mg/kg	AJY	6/06/05
Metals Preparation	EPA 3051	87.6	DFS	AJY	6/03/05

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 6010B ANALYSIS**  
**Metals by ICP**

**QUALITY CONTROL - SOLID**

**DATE PREPARED: 06/03/2005**

QC Sample	Method Blank	Lab Control Sample
Units	mg/kg	% Recovery
Acceptance Limits	Results	80-120%
<b>Analyte</b>		
Silver (Ag)	<0.500	84.7
Aluminum (Al)	NA	NA
Arsenic (As)	<1.000	89.0
Boron (B)	NA	NA
Barium (Ba)	<0.500	92.9
Beryllium (Be)	<0.500	91.1
Calcium (Ca)	NA	NA
Cadmium (Cd)	<0.500	92.8
Cobalt (Co)	NA	NA
Chromium (Cr)	<0.500	93.6
Copper (Cu)	NA	NA
Iron (Fe)	NA	NA
Magnesium (Mg)	NA	NA
Manganese (Mn)	NA	NA
Molybdenum (Mo)	NA	NA
Nickel (Ni)	<1.000	92.0
Lead (Pb)	<1.000	90.1
Antimony (Sb)	<2.500	89.3
Selenium (Se)	<2.500	86.5
Strontium (Sr)	NA	NA
Titanium (Ti)	NA	NA
Thallium (Tl)	<2.500	90.1
Vanadium (V)	<0.500	91.6
Zinc (Zn)	<1.000	94.1

Matrix Spike / Duplicate Spike performed as per method and  
reported if assigned on Chain of Custody.



GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 7470/7471 ANALYSIS**  
**Mercury by Cold Vapor Atomic Absorption**

**QUALITY CONTROL - SOLID**

**Date Analyzed: 06/03/2005**

QC Sample	Method Blank	Lab Control Sample
Units	mg/kg	% Recovery
Acceptance Limits	Results	85-115 %
<b>Analyte</b>		
Mercury (Hg)	<0.040 (solid)	103

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH STREET, HOPKINTON, MA 01748 (781) 278-4710  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP EPH  
EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

EXT. DATE: 6/6/05

Solid

Page 1 of 2

METHOD BLANK	AQUEOUS ug/L-PPB	SOLID mg/kg - PPM
<b>UNWEIGHTED CONC.</b>		
C9-C18 Aliphatics	<100	<1.0
C19-C36 Aliphatics	<100	<1.0
C10-C22 Aromatics	<100	<2.0
C10-C22 Aromatics (adjusted)	<100	<1.0
<b>TARGET COMPOUNDS</b>		
Naphthalene	<5.0	<0.30
2-Methylnaphthalene	<5.0	<0.30
Acenaphthylene	<5.0	<0.30
Acenaphthene	<5.0	<0.30
Fluorene	<5.0	<0.30
Phenanthrene	<5.0	<0.30
Anthracene	<5.0	<0.30
Fluoranthene	<5.0	<0.30
Pyrene	<5.0	<0.30
Benzo(a)anthracene	<5.0	<0.30
Chrysene	<5.0	<0.30
Benzo(b)fluoranthene	<5.0	<0.30
Benzo(k)fluoranthene	<5.0	<0.30
Benzo(a)pyrene	<5.0	<0.30
Indeno(1,2,3-c,d)pyrene	<5.0	<0.30
Dibenzo(a,h)anthracene	<5.0	<0.30
Benzo(g,h,i)perylene	<5.0	<0.30
<b>Surrogate:</b>	<b>Recovery (%)</b>	<b>Acceptance Limits</b>
***1-Chlorooctadecane (Aliphatic)	92.4	40-140
***p-Terphenyl (Aromatic)	81.6	40-140
<b>Fractionation Surrogate:</b>		
***2-Bromonaphthalene	60.9	40-140

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ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH STREET, HOPKINTON, MA 01748 (781) 278-4710  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP EPH  
EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

EXT. DATE: 6/6/05

Solid

LABORATORY CONTROL SAMPLE DUPLICATE LCS	LCS Recovery (%)	LCS Dup Recovery (%)	Limits
<b>Aliphatics:</b>			
Nonane	36.9	43.0	30-140
Decane	45.4	53.5	40-140
Dodecane	50.3	61.7	40-140
Tetradecane	57.0	71.1	40-140
Hexadecane	71.7	80.7	40-140
Octadecane	76.8	87.0	40-140
Nonadecane	69.0	84.1	40-140
Eicosane	75.5	92.0	40-140
Docosane	73.8	86.9	40-140
Tetracosane	71.4	84.7	40-140
Hexacosane	66.8	80.7	40-140
Octacosane	63.3	76.1	40-140
Triacontane	65.4	79.8	40-140
Hexatriacontane	69.7	85.3	
<b>Aromatics:</b>			
Naphthalene	57.0	54.9	40-140
2-Methylnaphthalene	59.1	56.7	40-140
Acenaphthylene	65.5	64.4	40-140
Acenaphthene	68.7	68.4	40-140
Fluorene	70.3	69.9	40-140
Phenanthrene	74.1	70.7	40-140
Anthracene	73.7	70.0	40-140
Fluoranthene	81.4	73.9	40-140
Pyrene	79.5	70.0	40-140
Benzo(a)anthracene	70.3	65.8	40-140
Chrysene	77.5	72.7	40-140
Benzo(b)fluoranthene	67.5	63.4	40-140
Benzo(k)fluoranthene	74.6	70.6	40-140
Benzo(a)pyrene	67.5	64.9	40-140
Indeno(1,2,3-c,d)pyrene	63.7	59.8	40-140
Dibenzo(a,h)anthracene	77.1	80.8	40-140
Benzo(g,h,i)perylene	70.0	67.3	40-140
<b>Surrogate:</b>			
***1-Chlorooctadecane (Aliphatic)	66.5	80.7	40-130
***p-Terphenyl (Aromatic)	80.2	71.8	40-130
<b>Fractionation Surrogate:</b>			
***2-Bromonaphthalene	74.3	58.4	40-140

W.O. # 0506-00018  
(for lab use only)

[illegible]

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
<i>OK</i>	6-2-05	<i>WJ 6/2/05 1400</i>
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:

PROJECT MANAGER: Verity McLean EXT: \_\_\_\_\_

DATA REPORT ☒ PDF (Adobe) ☐ ASCII ☐ EXCEL Specify State \_\_\_\_\_

**106 South Street**

Hopkinton, MA 01748

(508) 435-9244

**FAX (508) 435-9912**



GZAP003

#1 limited volume

#2 hi metals expected

TURNAROUND TIME: Standard Rush Days, Approved by: \_\_\_\_\_

LAB USE: \_\_\_\_\_

TEMP. OF COOLER 0.1 °C

GAZ FILE NO: 08.00 18237.00 6/2 46 PO. NO. 601

PROJECT SECOND STREET, EVERETT, MA

LOCATION EVERETT, MA

COLLECTOR(S) AK SHEET 1 OF 1

## **Soil Analyses**

**0509-00176 – 06/02/05**

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA and ME: MA092 NH: 2028  
CT: PH0579 RI: LAO00236  
NELAC - NYS DOH: 11063

**ANALYTICAL DATA REPORT**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffery Hardin

Project No.: 08.0018237.00  
Work Order No.: 0509-00176  
Date Received: 6/02/05  
Date Reported: 10/04/05

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
6/02/2005	Solid	0509-00176 001	4-1
6/02/2005	Solid	0509-00176 002	4-2
6/02/2005	Solid	0509-00176 003	5-2

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 10/04/05  
Work Order No.: 0509-00176

---

### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were assigned on 09/28/05 via x Analysis Transfer Record,   EC,   FEDEX, or   hand delivered  
The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

#### 2. EPA Method 1312/6010B - SPLP Metals

Please note that the room temperature changed by more than 23 +/- 2 degrees C during the 16-20 hour leaching procedure.

The minimum temperature was: 19 degrees C.

The maximum temperature was: 22 degrees C.

The method requires that this information is noted on the data report.

Attach QC 1312/6010B 10/03/05 - SPLP

pH Measurement of Filtrate:

Samples:

4-1 pH = 6.17 std units

4-2 pH = 2.10 std units

5-2 pH = 2.16 std units

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 10/04/05  
Work Order No.: 0509-00176

---

Data Authorized By: \_\_\_\_\_



% R = % Recovery  
DF = Dilution Factor  
DFS = Dilution Factor Solids  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.



GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 10/04/05  
Work Order No.: 0509-00176

Sample ID: 4-1  
Sample Date: 6/02/2005

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
SPLP Preparation	EPA 1312	1		AJY	10/03/05
Lead	EPA 1312/6010B	<0.010	mg/L	AJY	10/03/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Work Order No.: 0509-00176

Sample ID: 4-2  
Sample Date: 6/02/2005

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
SPLP Preparation	EPA 1312	1		AJY	10/03/05
Lead	EPA 1312/6010B	0.119	mg/L	AJY	10/03/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Work Order No.: 0509-00176

Sample ID: 5-2  
Sample Date: 6/02/2005

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
SPLP Preparation	EPA 1312	1		AJY	10/03/05
Lead	EPA 1312/6010B	0.158	mg/L	AJY	10/03/05

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 1312/6010B ANALYSIS**  
**Metals by ICP**

**QUALITY CONTROL - SPLP**

**DATE PREPARED: 10/03/2005**

QC Sample	Method Blank	Lab Control Sample
Units	mg/L	% Recovery
Acceptance Limits	Results	80-120
<b>Analyte</b>		
Silver (Ag)	NA	NA
Aluminum (Al)	NA	NA
Arsenic (As)	NA	NA
Boron (B)	NA	NA
Barium (Ba)	NA	NA
Beryllium (Be)	NA	NA
Calcium (Ca)	NA	NA
Cadmium (Cd)	NA	NA
Cobalt (Co)	NA	NA
Chromium (Cr)	NA	NA
Copper (Cu)	NA	NA
Iron (Fe)	NA	NA
Magnesium (Mg)	NA	NA
Manganese (Mn)	NA	NA
Molybdenum (Mo)	NA	NA
Nickel (Ni)	NA	NA
Lead (Pb)	<0.010	91.4
Antimony (Sb)	NA	NA
Selenium (Se)	NA	NA
Strontium (Sr)	NA	NA
Titanium (Ti)	NA	NA
Thallium (Tl)	NA	NA
Vanadium (V)	NA	NA
Zinc (Zn)	NA	NA

Matrix Spike / Duplicate Spike performed as per method and  
reported if assigned on Chain of Custody.



## **Appendix F**

### **Laboratory Data Sheets and Summary Tables**

#### **Water Analyses**

**0406-00187 – 06/23/04**

**0407-00110 – 07/21/04**

**0505-00039 – 05/03/05**

**0506-00019 - 06/-2/05**

**Water Analyses**

**0406-00187 – 06/23/04**

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA: MA092 NH: 2028 RI: 236  
CT: PH0579 OK: 9928 NC: 615  
NY (NELAC): 11063

**ANALYTICAL DATA REPORT**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffery Hardin

Project No.: 08.0018237.00  
Work Order No.: 0406-00187  
Date Received: 6/24/04  
Date Reported: 7/07/04

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
6/23/2004	Aqueous	0406-00187 001	UGE-1
6/23/2004	Aqueous	0406-00187 002	UGE-2
6/23/2004	Aqueous	0406-00187 003	UGE-3



GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/24/04  
Date Reported: 7/07/04  
Work Order No.: 0406-00187

---

### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 06/23/04 via    GZA courier,    EC,    FEDEX, or   X   hand delivered. The temperature of the   x   temperature blank/   cooler air, was 10.3 degrees C. The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

#### 2. EPA Method 6010/7470 - Metals

Attach QC 6010 06/25/04 - Aqueous  
Attach QC Mercury 06/28/04 - Aqueous

#### 3. EPA Method 8270 - PAHs

Attach QC 8270 06/29/04 - Aqueous

The surrogate recoveries for sample "UGE-3" are diluted out due to the elevated contamination found in the sample.

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/24/04  
Date Reported: 7/07/04  
Work Order No.: 0406-00187

---

Data Authorized By:



% R = % Recovery  
DF = Dilution Factor  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

### Laboratory Identification Numbers:

MA: MA092      NH: 2028  
CT: PH0579      RI: 236  
NC: 615      NY (NELAC): 11063

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/24/04  
Date Reported: 7/07/04  
Work Order No.: 0406-00187

Sample ID: UGE-1  
Sample Date: 6/23/2004

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	<2.0	ug/L	CMG	7/01/04
2-Methylnaphthalene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Acenaphthylene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Acenaphthene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Fluorene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Phenanthrene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Anthracene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Fluoranthene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Pyrene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [a] Anthracene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Chrysene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [b] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [k] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [a] Pyrene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Indeno [1,2,3-cd] Pyrene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Dibenzo [a,h] Anthracene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [g,h,i] Perylene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	32.2	% R	CMG	7/01/04
***2-Fluorobiphenyl	EPA 8270	52.9	% R	CMG	7/01/04
***P-Terphenyl-D14	EPA 8270	60.6	% R	CMG	7/01/04
Extraction	EPA 8270	1.0	DF	CMG	6/29/04
PRIORITY POLLUTANT METALS					
Silver	EPA 6010	<0.0050	mg/L	AJY	6/25/04
Arsenic	EPA 6010	<0.0100	mg/L	AJY	6/25/04
Beryllium	EPA 6010	<0.0050	mg/L	AJY	6/25/04
Cadmium	EPA 6010	<0.0050	mg/L	AJY	6/25/04
Chromium	EPA 6010	0.0179	mg/L	AJY	6/25/04
Copper	EPA 6010	<0.0150	mg/L	AJY	6/25/04
Mercury	EPA 7470A	<0.00050	mg/L	NH	6/28/04
Nickel	EPA 6010	0.0277	mg/L	AJY	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Work Order No.: 0406-00187

Sample ID: UGE-1  
Sample Date: 6/23/2004

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
Lead	EPA 6010	0.108	mg/L	AJY	6/28/04
Antimony	EPA 6010	<0.0250	mg/L	AJY	6/25/04
Selenium	EPA 6010	<0.0250	mg/L	AJY	6/25/04
Thallium	EPA 6010	<0.0250	mg/L	AJY	6/25/04
Zinc	EPA 6010	2.99	mg/L	AJY	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0406-00187

Sample ID: UGE-2  
 Sample Date: 6/23/2004

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	<2.0	ug/L	CMG	7/01/04
2-Methylnaphthalene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Acenaphthylene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Acenaphthene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Fluorene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Phenanthrene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Anthracene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Fluoranthene	EPA 8270	2.3	ug/L	CMG	7/01/04
Pyrene	EPA 8270	2.4	ug/L	CMG	7/01/04
Benzo [a] Anthracene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Chrysene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [b] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [k] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [a] Pyrene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Indeno [1,2,3-cd] Pyrene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Dibenzo [a,h] Anthracene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Benzo [g,h,i] Perylene	EPA 8270	<2.0	ug/L	CMG	7/01/04
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	45.2	% R	CMG	7/01/04
***2-Fluorobiphenyl	EPA 8270	70.3	% R	CMG	7/01/04
***P-Terphenyl-D14	EPA 8270	69.8	% R	CMG	7/01/04
Extraction	EPA 8270	1.0	DF	CMG	6/29/04
PRIORITY POLLUTANT METALS					
Silver	EPA 6010	<0.0050	mg/L	AJY	6/25/04
Arsenic	EPA 6010	<0.0100	mg/L	AJY	6/25/04
Beryllium	EPA 6010	<0.0050	mg/L	AJY	6/25/04
Cadmium	EPA 6010	0.0067	mg/L	AJY	6/25/04
Chromium	EPA 6010	<0.0050	mg/L	AJY	6/25/04
Copper	EPA 6010	0.217	mg/L	AJY	6/25/04
Mercury	EPA 7470A	<0.00050	mg/L	NH	6/28/04
Nickel	EPA 6010	0.0261	mg/L	AJY	6/25/04
Lead	EPA 6010	1.45	mg/L	AJY	6/28/04
Antimony	EPA 6010	0.0519	mg/L	AJY	6/25/04
Selenium	EPA 6010	<0.0250	mg/L	AJY	6/25/04
Thallium	EPA 6010	<0.0250	mg/L	AJY	6/25/04
Zinc	EPA 6010	1.71	mg/L	AJY	6/25/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0406-00187

Sample ID: UGE-3  
 Sample Date: 6/23/2004

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	< 22	ug/L	CMG	7/02/04
2-Methylnaphthalene	EPA 8270	640	ug/L	CMG	7/02/04
Acenaphthylene	EPA 8270	< 22	ug/L	CMG	7/02/04
Acenaphthene	EPA 8270	260	ug/L	CMG	7/02/04
Fluorene	EPA 8270	390	ug/L	CMG	7/02/04
Phenanthrene	EPA 8270	740	ug/L	CMG	7/02/04
Anthracene	EPA 8270	190	ug/L	CMG	7/02/04
Fluoranthene	EPA 8270	130	ug/L	CMG	7/02/04
Pyrene	EPA 8270	180	ug/L	CMG	7/02/04
Benzo [a] Anthracene	EPA 8270	< 22	ug/L	CMG	7/02/04
Chrysene	EPA 8270	< 22	ug/L	CMG	7/02/04
Benzo [b] Fluoranthene	EPA 8270	< 22	ug/L	CMG	7/02/04
Benzo [k] Fluoranthene	EPA 8270	< 22	ug/L	CMG	7/02/04
Benzo [a] Pyrene	EPA 8270	< 22	ug/L	CMG	7/02/04
Indeno [1,2,3-cd] Pyrene	EPA 8270	< 22	ug/L	CMG	7/02/04
Dibenzo [a,h] Anthracene	EPA 8270	< 22	ug/L	CMG	7/02/04
Benzo [g,h,i] Perylene	EPA 8270	< 22	ug/L	CMG	7/02/04
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	DO	* % R	CMG	7/02/04
***2-Fluorobiphenyl	EPA 8270	DO	* % R	CMG	7/02/04
***P-Terphenyl-D14	EPA 8270	DO	* % R	CMG	7/02/04
Extraction	EPA 8270	1.0	DF	ARL	6/28/04
PRIORITY POLLUTANT METALS					
Silver	EPA 6010	< 0.0050	mg/L	AJY	6/25/04
Arsenic	EPA 6010	0.0318	mg/L	AJY	6/25/04
Beryllium	EPA 6010	< 0.0050	mg/L	AJY	6/25/04
Cadmium	EPA 6010	< 0.0050	mg/L	AJY	6/25/04
Chromium	EPA 6010	0.0156	mg/L	AJY	6/25/04
Copper	EPA 6010	0.233	mg/L	AJY	6/25/04
Mercury	EPA 7470A	< 0.00050	mg/L	NH	6/28/04
Nickel	EPA 6010	0.0213	mg/L	AJY	6/25/04
Lead	EPA 6010	1.94	mg/L	AJY	6/28/04
Antimony	EPA 6010	0.528	mg/L	AJY	6/25/04
Selenium	EPA 6010	< 0.0250	mg/L	AJY	6/25/04
Thallium	EPA 6010	< 0.0250	mg/L	AJY	6/25/04
Zinc	EPA 6010	3.97	mg/L	AJY	6/25/04

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 6010B ANALYSIS**  
**Metals by ICP**

**QUALITY CONTROL - AQUEOUS**

**DATE PREPARED: 06/25/2004**

QC Sample	Method Blank	Lab Control Sample
Units	mg/L	% Recovery
Acceptance Limits	Results	80-120 %
<b>Analyte</b>		
Silver (Ag)	<0.005	87.3
Aluminum (Al)	NA	NA
Arsenic (As)	<0.010	106
Boron (B)	NA	NA
Barium (Ba)	NA	NA
Beryllium (Be)	<0.005	100
Calcium (Ca)	NA	NA
Cadmium (Cd)	<0.005	103
Cobalt (Co)	NA	NA
Chromium (Cr)	<0.005	98.5
Copper (Cu)	<0.015	96.6
Iron (Fe)	NA	NA
Magnesium (Mg)	NA	NA
Manganese (Mn)	NA	NA
Molybdenum (Mo)	NA	NA
Nickel (Ni)	<0.010	100
Lead (Pb)	<0.010	119
Antimony (Sb)	<0.025	104
Selenium (Se)	<0.025	104
Strontium (Sr)	NA	NA
Titanium (Ti)	NA	NA
Thallium (Tl)	<0.025	96.5
Vanadium (V)	NA	NA
Zinc (Zn)	<0.010	112
Zirconium (Zr)	NA	NA

Matrix Spike / Duplicate Spike performed as per method and  
reported if assigned on Chain of Custody.

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 7470A ANALYSIS**  
**Mercury by Cold Vapor Atomic Absorption**

**QUALITY CONTROL - AQUEOUS**

**Date Prepared: 06/28/2004**

QC Sample	Method Blank	Lab Control Sample
Units	mg/kg	% Recovery
Acceptance Limits	Results	85-115 %
<b>Analyte</b>		
Mercury (Hg)	<0.0005(Aq)	95.1

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.



**EPA Method 8270****GZA GeoEnvironmental, Inc.****Quality Control Report: Method Blank / Laboratory Control Sample****Aqueous****Extraction Date: 6/29/04****MB File Name: K6108****Analysis Date: 6/30/04****LCS File Name: K6109****Spike Value =20000 ppb**

Target Compounds	Method Blank		Laboratory Control Sample		
	Result	Reporting Limit	% Recovery	Limits	Pass/Fail
naphthalene	ND	2.0	88.7	40-140	ok
2-methylnaphthalene	ND	2.0	105	40-140	ok
acenaphthylene	ND	2.0	98.8	40-140	ok
acenaphthene	ND	2.0	101	40-140	ok
fluorene	ND	2.0	100	40-140	ok
phenanthrene	ND	2.0	105	40-140	ok
anthracene	ND	2.0	114	40-140	ok
fluoranthene	ND	2.0	101	40-140	ok
pyrene	ND	2.0	108	40-140	ok
benzo [a] anthracene	ND	2.0	101	40-140	ok
chrysene	ND	2.0	91.7	40-140	ok
benzo [b] fluoranthene	ND	2.0	89.7	40-140	ok
benzo [k] fluoranthene	ND	2.0	89.7	40-140	ok
benzo [a] pyrene	ND	2.0	88.6	40-140	ok
indeno [1,2,3-cd] pyrene	ND	2.0	49.9	40-140	ok
dibenzo [a,h] anthracene	ND	2.0	53.8	40-140	ok
benzo [ghi] perylene	ND	2.0	42.9	40-140	ok
<b>Surrogates:</b>	<b>% Recovery</b>	<b>Limits</b>	<b>% Recovery</b>	<b>Limits</b>	<b>Pass/Fail</b>
Nitrobenzene-D5	50.8	47-120	66.0	47-120	ok
2-Fluorobiphenyl	70.4	46-120	83.8	46-120	ok
p-Terphenyl-D14	50.5	39-120	60.3	39-120	ok

W.O. # 0406-00187  
(for lab use only)

# CHAIN-OF-CUSTODY RECORD

Sample I.D.	Date/Time Sampled (Very Important)	Matrix A-Air S-Soil GW=Ground W. SW=Surface W. WW=Waste W. DW=Drinking W. Other (specify)	ANALYSIS REQUIRED										Total # of Cont.	Note #											
			GC Screen (VOA)	DH Cond	GC 242 2	624	625	Formaldehyde	8021	8021 - 8010 List	8021 - 8020 List	8270 CPUL/CPAH DBN			8082-PCBs Only	8081 - Pest Only	TPH-GC (Mod 8100)	TPH-GC w/Fluor	EPH (MA DEP)	VPH (MA DEP)	TCLP (Spec. Below)	Filtration (if requested)	Metals (List Below)		
UGE-1	6/23/04 1500hrs	GW																					2	1,2	
UGE-2	6/23/04 1515hrs	GW																					2	1,2	
UGE-3	6/23/04 1530hrs	GW																					2	1,2,3	
PRESERVATIVE (Cl <sup>-</sup> , HCl, MeOH, N - HNO <sub>3</sub> , S - H <sub>2</sub> SO <sub>4</sub> , Na - NaOH, O - Other)*																									
CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, O-Other)*																									
RELINQUISHED BY: <u>[Signature]</u> DATE/TIME: <u>6/23/04 5:00</u> RECEIVED BY: <u>UA/K in</u>																									
RELINQUISHED BY: <u>Walk in</u> DATE/TIME: <u>6/23/04 6:45</u> RECEIVED BY: <u>1030</u>																									
RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____																									

NOTES: Preservatives, special reporting limits, known contamination, additional testing parameters, etc.

- 1) Metals: plastic vials
- 2) PHTs: glass w/ no pres.
- 3) Sample contains petroleum product - test only H<sub>2</sub>O

PROJECT MANAGER: USS EXT: 4702

DATA REPORT ☒ PDF (Adobe) ☐ ASCII ☐ EXCEL Specify State

**GZA GEOENVIRONMENTAL, INC.**  
ENGINEERS AND SCIENTISTS

106 South Street  
Hopkinton, MA 01748  
(508) 435-9244  
FAX (508) 435-9912



TURNAROUND TIME: Standard Rush \_\_\_\_\_ Days, Approved by: \_\_\_\_\_  
LAB USE: \_\_\_\_\_  
TEMP. OF COOLER: 10.3 °C  
6/23/04  
1726  
16

GZA FILE NO: 08 0018237 00 P.O. NO. \_\_\_\_\_

PROJECT: 413-421 Second St.

LOCATION: Everett, MA

COLLECTOR(S): SMH SHEET 1 OF 2

**Water Analyses**

**0407-00110 – 07/21/04**

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA: MA092 NH: 2028 RI: 236  
CT: PH0579 OK: 9928 NC: 615  
NY (NELAC): 11063

**A N A L Y T I C A L   D A T A   R E P O R T**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffrey Hardin

Project No.: 08.0018237.00  
Work Order No.: 0407-00110  
Date Received: 7/21/04  
Date Reported: 7/31/04

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
7/20/2004	Aqueous	0407-00110 001	B-1
7/20/2004	Aqueous	0407-00110 002	B-2
7/20/2004	Aqueous	0407-00110 003	B-102

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 7/21/04  
Date Reported: 7/31/04  
Work Order No.: 0407-00110

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### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 07/21/04 via    GZA courier,    EC,    FEDEX, or   X   hand delivered.  
The temperature of the   x   temperature blank/    cooler air, was 2.3 degrees C. The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

#### 2. EPA Method 6010/7471 - Metals

Attach QC 6010 07/22/04 - Aqueous  
Attach QC Mercury 07/23/04 - Aqueous

#### 3. MADEP VPH

Attach QC VPH 07/22/04 - Aqueous

#### 4. MADEP EPH

Attach QC EPH 07/28/04 - Aqueous

Were any significant modifications made to the VPH or EPH methods?      ( ) Yes    ( x ) No

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

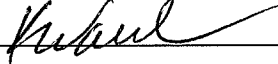
Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 7/21/04  
Date Reported: 7/31/04  
Work Order No.: 0407-00110

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Data Authorized By: 

% R = % Recovery  
DF = Dilution Factor  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

Laboratory Identification Numbers:

MA: MA092      NH: 2028  
CT: PH0579      RI: 236  
NC: 615      NY (NELAC): 11063

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 7/21/04  
Date Reported: 7/31/04  
Work Order No.: 0407-00110

Sample ID: B-1  
Sample Date: 7/20/2004

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/22/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	< 10	ug/L	MAM	7/22/04
C9-C12 Aliphatics	MADEP	< 10	ug/L	MAM	7/22/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	< 10	ug/L	MAM	7/22/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	103	% R	MAM	7/22/04
***2,5-Dibromotoluene (FID)	MADEP	97.3	% R	MAM	7/22/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 2.0	ug/L	MAM	7/22/04
Benzene	MADEP	< 0.50	ug/L	MAM	7/22/04
Toluene	MADEP	< 0.50	ug/L	MAM	7/22/04
Ethylbenzene	MADEP	< 0.50	ug/L	MAM	7/22/04
m&p-Xylene	MADEP	< 0.50	ug/L	MAM	7/22/04
o-Xylene	MADEP	< 0.50	ug/L	MAM	7/22/04
Naphthalene	MADEP	< 1.0	ug/L	MAM	7/22/04
Preparation	EPA 5030B	1	DF	MAM	7/22/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/28/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	< 100	ug/L	RJD	7/28/04
C9-C18 Aliphatic Fraction	MADEP	< 100	ug/L	RJD	7/28/04
C19-C36 Aliphatic Fraction	MADEP	< 100	ug/L	RJD	7/28/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	< 100	ug/L	RJD	7/28/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-130 %R	MADEP	84.6	%R	RJD	7/28/04
***p-Terphenyl (aromatic): 50-123 %R	MADEP	96.6	%R	RJD	7/28/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/28/04
2-Methylnaphthalene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/28/04
Acenaphthylene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/28/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00110

Sample ID: B-1  
 Sample Date: 7/20/2004

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
Acenaphthene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/28/04
Fluorene	MADEP	< 5.0	ug/L	RJD	7/28/04
Phenanthrene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/28/04
Anthracene	MADEP	< 5.0	ug/L	RJD	7/28/04
Fluoranthene	MADEP	< 5.0	ug/L	RJD	7/28/04
Pyrene	MADEP	< 5.0	ug/L	RJD	7/28/04
Benzo [a] Anthracene	MADEP	< 5.0	ug/L	RJD	7/28/04
Chrysene	MADEP	< 5.0	ug/L	RJD	7/28/04
Benzo [b] Fluoranthene	MADEP	< 5.0	ug/L	RJD	7/28/04
Benzo [k] Fluoranthene	MADEP	< 5.0	ug/L	RJD	7/28/04
Benzo [a] Pyrene	MADEP	< 5.0	ug/L	RJD	7/28/04
Indeno [1,2,3-cd] Pyrene	MADEP	< 5.0	ug/L	RJD	7/28/04
Dibenzo [a,h] Anthracene	MADEP	< 5.0	ug/L	RJD	7/28/04
Benzo [g,h,i] Perylene	MADEP	< 5.0	ug/L	RJD	7/28/04
Extraction	EPA 3510C	1.0	DF	CMG	7/28/04
PRIORITY POLLUTANT METALS				AJY	7/23/04
Silver	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Arsenic	EPA 6010	< 0.010	mg/L	AJY	7/23/04
Beryllium	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Cadmium	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Chromium	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Copper	EPA 6010	< 0.015	mg/L	AJY	7/23/04
Mercury	EPA 7470A	< 0.00050	mg/L	NH	7/16/04
Nickel	EPA 6010	< 0.010	mg/L	AJY	7/23/04
Lead	EPA 6010	< 0.010	mg/L	AJY	7/23/04
Antimony	EPA 6010	< 0.025	mg/L	AJY	7/23/04
Selenium	EPA 6010	< 0.025	mg/L	AJY	7/23/04
Thallium	EPA 6010	< 0.025	mg/L	AJY	7/23/04
Zinc	EPA 6010	0.061	mg/L	AJY	7/23/04



GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00110

Sample ID: B-2  
 Sample Date: 7/20/2004

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/22/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	<10	ug/L	MAM	7/22/04
C9-C12 Aliphatics	MADEP	<10	ug/L	MAM	7/22/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	<10	ug/L	MAM	7/22/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	107	% R	MAM	7/22/04
***2,5-Dibromotoluene (FID)	MADEP	114	% R	MAM	7/22/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	<2.0	ug/L	MAM	7/22/04
Benzene	MADEP	<0.50	ug/L	MAM	7/22/04
Toluene	MADEP	<0.50	ug/L	MAM	7/22/04
Ethylbenzene	MADEP	<0.50	ug/L	MAM	7/22/04
m&p-Xylene	MADEP	<0.50	ug/L	MAM	7/22/04
o-Xylene	MADEP	<0.50	ug/L	MAM	7/22/04
Naphthalene	MADEP	<1.0	ug/L	MAM	7/22/04
Preparation	EPA 5030B	1	DF	MAM	7/22/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/28/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	<100	ug/L	RJD	7/28/04
C9-C18 Aliphatic Fraction	MADEP	<100	ug/L	RJD	7/28/04
C19-C36 Aliphatic Fraction	MADEP	<100	ug/L	RJD	7/28/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	<100	ug/L	RJD	7/28/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-130%R	MADEP	81.6	%R	RJD	7/28/04
***p-Terphenyl (aromatic): 50-123%R	MADEP	93.3	%R	RJD	7/28/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	7/28/04
2-Methylnaphthalene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	7/28/04
Acenaphthylene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	7/28/04
Acenaphthene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	7/28/04
Fluorene	MADEP	<5.0	ug/L	RJD	7/28/04
Phenanthrene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	7/28/04
Anthracene	MADEP	<5.0	ug/L	RJD	7/28/04
Fluoranthene	MADEP	<5.0	ug/L	RJD	7/28/04
Pyrene	MADEP	<5.0	ug/L	RJD	7/28/04
Benzo [a] Anthracene	MADEP	<5.0	ug/L	RJD	7/28/04
Chrysene	MADEP	<5.0	ug/L	RJD	7/28/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services

Project No.: 08.0018237.00

Work Order No.: 0407-00110

Sample ID: B-2  
 Sample Date: 7/20/2004

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
Benzo [b] Fluoranthene	MADEP	< 5.0	ug/L	RJD	7/28/04
Benzo [k] Fluoranthene	MADEP	< 5.0	ug/L	RJD	7/28/04
Benzo [a] Pyrene	MADEP	< 5.0	ug/L	RJD	7/28/04
Indeno [1,2,3-cd] Pyrene	MADEP	< 5.0	ug/L	RJD	7/28/04
Dibenzo [a,h] Anthracene	MADEP	< 5.0	ug/L	RJD	7/28/04
Benzo [g,h,i] Perylene	MADEP	< 5.0	ug/L	RJD	7/28/04
Extraction	EPA 3510C	1.0	DF	CMG	7/28/04
PRIORITY POLLUTANT METALS				AJY	7/23/04
Silver	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Arsenic	EPA 6010	< 0.010	mg/L	AJY	7/23/04
Beryllium	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Cadmium	EPA 6010	0.0087	mg/L	AJY	7/23/04
Chromium	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Copper	EPA 6010	0.292	mg/L	AJY	7/23/04
Mercury	EPA 7470A	< 0.00050	mg/L	NH	7/16/04
Nickel	EPA 6010	0.022	mg/L	AJY	7/23/04
Lead	EPA 6010	0.119	mg/L	AJY	7/23/04
Antimony	EPA 6010	0.135	mg/L	AJY	7/23/04
Selenium	EPA 6010	< 0.025	mg/L	AJY	7/23/04
Thallium	EPA 6010	< 0.025	mg/L	AJY	7/23/04
Zinc	EPA 6010	1.31	mg/L	AJY	7/23/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00110

Sample ID: B-102  
 Sample Date: 7/20/2004

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE PETROLEUM HYDROCARBONS-and ANALYTES				MAM	7/22/04
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	< 10	ug/L	MAM	7/22/04
C9-C12 Aliphatics	MADEP	< 10	ug/L	MAM	7/22/04
C9-C10 Aromatics (excludes targeted analytes)	MADEP	11	ug/L	MAM	7/22/04
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	102	% R	MAM	7/22/04
***2,5-Dibromotoluene (FID)	MADEP	91.1	% R	MAM	7/22/04
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	< 2.0	ug/L	MAM	7/22/04
Benzene	MADEP	< 0.50	ug/L	MAM	7/22/04
Toluene	MADEP	< 0.50	ug/L	MAM	7/22/04
Ethylbenzene	MADEP	< 0.50	ug/L	MAM	7/22/04
m&p-Xylene	MADEP	< 0.50	ug/L	MAM	7/22/04
o-Xylene	MADEP	< 0.50	ug/L	MAM	7/22/04
Naphthalene	MADEP	< 1.0	ug/L	MAM	7/22/04
Preparation	EPA 5030B	1	DF	MAM	7/22/04
EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)				RJD	7/29/04
Unadjusted C11-C22 Aromatic Fraction	MADEP	< 150	ug/L	RJD	7/29/04
C9-C18 Aliphatic Fraction	MADEP	< 100	ug/L	RJD	7/29/04
C19-C36 Aliphatic Fraction	MADEP	< 100	ug/L	RJD	7/29/04
C11-C22 Aromatics (excludes target PAHs)	MADEP	< 150	ug/L	RJD	7/29/04
Surrogates:					
***1-Chlorooctadecane (aliphatic): 40-130%R	MADEP	113	%R	RJD	7/29/04
***p-Terphenyl (aromatic): 50-123%R	MADEP	98.1	%R	RJD	7/29/04
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/29/04
2-Methylnaphthalene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/29/04
Acenaphthylene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/29/04
Acenaphthene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/29/04
Fluorene	MADEP	< 5.0	ug/L	RJD	7/29/04
Phenanthrene (Diesel PAH)	MADEP	< 5.0	ug/L	RJD	7/29/04
Anthracene	MADEP	< 5.0	ug/L	RJD	7/29/04
Fluoranthene	MADEP	< 5.0	ug/L	RJD	7/29/04
Pyrene	MADEP	< 5.0	ug/L	RJD	7/29/04
Benzo [a] Anthracene	MADEP	< 5.0	ug/L	RJD	7/29/04
Chrysene	MADEP	< 5.0	ug/L	RJD	7/29/04

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0407-00110

Sample ID: B-102  
 Sample Date: 7/20/2004

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
Benzo [b] Fluoranthene	MADEP	< 5.0	ug/L	RJD	7/29/04
Benzo [k] Fluoranthene	MADEP	< 5.0	ug/L	RJD	7/29/04
Benzo [a] Pyrene	MADEP	< 5.0	ug/L	RJD	7/29/04
Indeno [1,2,3-cd] Pyrene	MADEP	< 5.0	ug/L	RJD	7/29/04
Dibenzo [a,h] Anthracene	MADEP	< 5.0	ug/L	RJD	7/29/04
Benzo [g,h,i] Perylene	MADEP	< 5.0	ug/L	RJD	7/29/04
Extraction	EPA 3510C	1.0	DF	CMG	7/28/04
PRIORITY POLLUTANT METALS				AJY	7/23/04
Silver	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Arsenic	EPA 6010	< 0.010	mg/L	AJY	7/23/04
Beryllium	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Cadmium	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Chromium	EPA 6010	< 0.0050	mg/L	AJY	7/23/04
Copper	EPA 6010	< 0.015	mg/L	AJY	7/23/04
Mercury	EPA 7470A	< 0.00050	mg/L	NH	7/16/04
Nickel	EPA 6010	< 0.010	mg/L	AJY	7/23/04
Lead	EPA 6010	0.034	mg/L	AJY	7/23/04
Antimony	EPA 6010	< 0.025	mg/L	AJY	7/23/04
Selenium	EPA 6010	< 0.025	mg/L	AJY	7/23/04
Thallium	EPA 6010	< 0.025	mg/L	AJY	7/23/04
Zinc	EPA 6010	0.093	mg/L	AJY	7/23/04

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 6010B ANALYSIS**  
**Metals by ICP**

**QUALITY CONTROL - AQUEOUS**

**DATE PREPARED: 07/22/2004**

QC Sample	Method Blank	Lab Control Sample
Units	mg/L	% Recovery
Acceptance Limits	Results	80-120 %
<b>Analyte</b>		
Silver (Ag)	<0.005	97.9
Aluminum (Al)	NA	NA
Arsenic (As)	<0.010	101
Boron (B)	NA	NA
Barium (Ba)	NA	NA
Beryllium (Be)	<0.005	99.3
Calcium (Ca)	NA	NA
Cadmium (Cd)	<0.005	97.1
Cobalt (Co)	NA	NA
Chromium (Cr)	<0.005	99.9
Copper (Cu)	<0.015	110
Iron (Fe)	NA	NA
Magnesium (Mg)	NA	NA
Manganese (Mn)	NA	NA
Molybdenum (Mo)	NA	NA
Nickel (Ni)	<0.010	101
Lead (Pb)	<0.010	95.7
Antimony (Sb)	<0.025	103
Selenium (Se)	<0.025	103
Strontium (Sr)	NA	NA
Titanium (Ti)	NA	NA
Thallium (Tl)	<0.025	94.3
Vanadium (V)	NA	NA
Zinc (Zn)	<0.010	105
Zirconium (Zr)	NA	NA

Matrix Spike / Duplicate Spike performed as per method and  
reported if assigned on Chain of Custody.

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH ST, HOPKINTON, MA 01748  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**EPA METHOD 7470/7471 ANALYSIS**  
**Mercury by Cold Vapor Atomic Absorption**

**QUALITY CONTROL - AQUEOUS**

**Date Analyzed: 07/23/2004**

QC Sample	Method Blank	Lab Control Sample
Units	mg/L	% Recovery
Acceptance Limits	Results	85-115 %
<b>Analyte</b>		
Mercury (Hg)	<0.0005(Aq)	88.8

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.

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 ENVIRONMENTAL CHEMISTRY LABORATORY  
 106 SOUTH STREET, HOPKINTON, MA 01748 (781) 278-4700  
 MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP VOLATILE PETROLEUM HYDROCARBONS (VPH) / ME DEP 4.2.17 - GRO / EPA Method 8021  
 PURGEABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

**DATE: 07/22/04 Aqueous**

<b>METHOD BLANK</b>	<b>AQUEOUS</b>	<b>SOLID</b>	
	<b>ug/L-PPB</b>	<b>mg/kg - PPM</b>	
<b>HYDROCARBON FRACTIONS</b>			
C5-C8 Aliphatics	<5.0	<0.5	
C9-C12 Aliphatics	<5.0	<0.5	
C9-C10 Aromatics	<5.0	<0.5	
<b>TARGET COMPOUNDS</b>			
Methyl tert butyl ether	<2.0	<0.25	
Benzene	<0.5	<0.05	
Toluene	<0.5	<0.05	
Ethylbenzene	<0.5	<0.05	
m,p-Xylenes	<0.5	<0.05	
o-Xylene	<0.5	<0.05	
Naphthalene	<1.0	<0.10	
<b>Surrogate:</b>	<b>% Recovery</b>	<b>Limits - Aqueous</b>	<b>Limits - Solid</b>
***2,5-Dibromotoluene (FID)	99.0	70-130	70-130
***2,5-Dibromotoluene (PID)	92.0	70-130	70-130
<b>LABORATORY CONTROL SAMPLE</b>			
	<b>% Recovery</b>	<b>Limits - Aqueous</b>	<b>Limits - Solid</b>
Methyl tert butyl ether	85.1	70-130	70-130
Benzene	97.1	70-130	70-130
Toluene	93.9	70-130	70-130
Ethylbenzene	93.6	70-130	70-130
m,p-Xylenes	96.8	70-130	70-130
o-Xylene	92.5	70-130	70-130
Naphthalene	78.8	-	-
<b>Surrogate:</b>			
***2,5-Dibromotoluene (FID)	96.0	70-130	70-130
***2,5-Dibromotoluene (PID)	90.0	70-130	70-130

GZA GEOENVIRONMENTAL, INC.  
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 106 SOUTH STREET, HOPKINTON, MA 01748 (781) 278-4708  
 MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP EPH  
 EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

EXT. DATE: 7/28/04

Aqueous

Page 1 of 2

METHOD BLANK	AQUEOUS ug/L-PPB	SOLID mg/kg - PPM
<b>UNWEIGHTED CONC.</b>		
C9-C18 Aliphatics	<100	<1.0
C19-C36 Aliphatics	<100	<1.0
C10-C22 Aromatics	<100	<2.0
C10-C22 Aromatics (adjusted)	<100	<1.0
<b>TARGET COMPOUNDS</b>		
Naphthalene	<5.0	<0.30
2-Methylnaphthalene	<5.0	<0.30
Acenaphthylene	<5.0	<0.30
Acenaphthene	<5.0	<0.30
Fluorene	<5.0	<0.30
Phenanthrene	<5.0	<0.30
Anthracene	<5.0	<0.30
Fluoranthene	<5.0	<0.30
Pyrene	<5.0	<0.30
Benzo(a)anthracene	<5.0	<0.30
Chrysene	<5.0	<0.30
Benzo(b)fluoranthene	<5.0	<0.30
Benzo(k)fluoranthene	<5.0	<0.30
Benzo(a)pyrene	<5.0	<0.30
Indeno(1,2,3-c,d)pyrene	<5.0	<0.30
Dibenzo(a,h)anthracene	<5.0	<0.30
Benzo(g,h,i)perylene	<5.0	<0.30
<b>Surrogate:</b>	<b>Recovery (%)</b>	<b>Acceptance Limits</b>
***1-Chlorooctadecane (Aliphatic)	108	40-130
***p-Terphenyl (Aromatic)	108	40-130
<b>Fractionation Surrogate:</b>		
***2-Bromonaphthalene	74.4	40-140



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 ENVIRONMENTAL CHEMISTRY LABORATORY  
 106 SOUTH STREET, HOPKINTON, MA 01748 (781) 278-4708  
 MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP EPH**  
**EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

EXT. DATE: 7/28/04

Aqueous

LABORATORY CONTROL SAMPLE	LCS	
	Recovery (%)	Limits
<b>Aliphatics:</b>		
Nonane	32.3	30-140
Decane	43.4	40-140
Dodecane	53.0	40-140
Tetradecane	63.8	40-140
Hexadecane	72.7	40-140
Octadecane	77.5	40-140
Nonadecane	83.7	40-140
Eicosane	89.4	40-140
Docosane	90.2	40-140
Tetracosane	93.8	40-140
Hexacosane	93.1	40-140
Octacosane	94.0	40-140
Triacontane	94.1	40-140
Hexatriacontane	96.3	40-140
<b>Aromatics:</b>		
Naphthalene	104	40-140
2-Methylnaphthalene	118	40-140
Acenaphthylene	73.1	40-140
Acenaphthene	76.1	40-140
Fluorene	81.9	40-140
Phenanthrene	89.7	40-140
Anthracene	84.3	40-140
Fluoranthene	95.4	40-140
Pyrene	97.0	40-140
Benzo(a)anthracene	94.8	40-140
Chrysene	101	40-140
Benzo(b)fluoranthene	93.2	40-140
Benzo(k)fluoranthene	101	40-140
Benzo(a)pyrene	96.9	40-140
Indeno(1,2,3-c,d)pyrene	87.7	40-140
Dibenzo(a,h)anthracene	101	40-140
Benzo(g,h,i)perylene	95.3	40-140
<b>Surrogate:</b>		
***1-Chlorooctadecane (Aliphatic)	114	40-140
***p-Terphenyl (Aromatic)	133	40-140
<b>Fractionation Surrogate:</b>		
***2-Bromonaphthalene	78.9	40-140



**Water Analyses**

**0505-00039 – 05/03/05**

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA and ME: MA092 NH: 2028  
CT: PH0579 RI: LAO00236  
NELAC - NYS DOH: 11063

**A N A L Y T I C A L   D A T A   R E P O R T**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffery Hardin

Project No.: 08.0018237.00  
Work Order No.: 0505-00039  
Date Received: 5/03/05  
Date Reported: 5/10/05

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
5/02/2005	Aqueous	0505-00039 001	B-201
5/02/2005	Aqueous	0505-00039 002	B-203
5/02/2005	Aqueous	0505-00039 003	B-205
5/02/2005	Aqueous	0505-00039 004	B-207

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 5/03/05  
Date Reported: 5/10/05  
Work Order No.: 0505-00039

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### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 05/03/05 via    GZA courier,    EC,    FEDEX, or   x   hand delivered. The temperature of the   x   temperature blank/   cooler air, was 1.3 degrees C. The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

#### 2. EPA Method 6010B/74710A - Metals

Attach QC 6010B 05/05/05 - Aqueous  
Attach QC Mercury 05/09/05 - Aqueous

#### 3. EPA Method 8270 - PAHs

The above samples have been evaluated for the presence of the target analytes at levels between the reporting (quantitation) limit and the method detection limit (MDL) and are reported, when detected, as estimated concentrations (J).

Attach QC 8270 05/09/05 - Aqueous

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 5/03/05  
Date Reported: 5/10/05  
Work Order No.: 0505-00039

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Data Authorized By: \_\_\_\_\_



% R = % Recovery  
DF = Dilution Factor  
DFS = Dilution Factor Solids  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 5/03/05  
Date Reported: 5/10/05  
Work Order No.: 0505-00039

Sample ID: B-201  
Sample Date: 5/02/2005

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	88	ug/L	CMG	5/10/05
2-Methylnaphthalene	EPA 8270	20	ug/L	CMG	5/10/05
Acenaphthylene	EPA 8270	1.1 J	ug/L	CMG	5/10/05
Acenaphthene	EPA 8270	18	ug/L	CMG	5/10/05
Fluorene	EPA 8270	15	ug/L	CMG	5/10/05
Phenanthrene	EPA 8270	22	ug/L	CMG	5/10/05
Anthracene	EPA 8270	4.8	ug/L	CMG	5/10/05
Fluoranthene	EPA 8270	3.2	ug/L	CMG	5/10/05
Pyrene	EPA 8270	2.3	ug/L	CMG	5/10/05
Benzo [a] Anthracene	EPA 8270	0.49 J	ug/L	CMG	5/10/05
Chrysene	EPA 8270	0.49 J	ug/L	CMG	5/10/05
Benzo [b] Fluoranthene	EPA 8270	0.27 J	ug/L	CMG	5/10/05
Benzo [k] Fluoranthene	EPA 8270	0.23 J	ug/L	CMG	5/10/05
Benzo [a] Pyrene	EPA 8270	0.31 J	ug/L	CMG	5/10/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Dibenzo [a,h] Anthracene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [g,h,i] Perylene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	50.5	% R	CMG	5/10/05
***2-Fluorobiphenyl	EPA 8270	56.9	% R	CMG	5/10/05
***P-Terphenyl-D14	EPA 8270	52.6	% R	CMG	5/10/05
Extraction	EPA 3510C	1.0	DF	CMG	5/10/05
MCP METALS					
Silver	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Arsenic	EPA 6010B	<0.010	mg/L	AJY	5/05/05
Barium	EPA 6010B	0.661	mg/L	AJY	5/05/05
Beryllium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Cadmium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Chromium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Mercury	EPA 7470A	<0.00050	mg/L	NH	5/09/05
Nickel	EPA 6010B	<0.010	mg/L	AJY	5/05/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Work Order No.: 0505-00039

Sample ID: B-201  
Sample Date: 5/02/2005

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
Lead	EPA 6010B	0.026	mg/L	AJY	5/05/05
Antimony	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Selenium	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Thallium	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Vanadium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Zinc	EPA 6010B	0.042	mg/L	AJY	5/05/05



GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0505-00039

Sample ID: B-203  
 Sample Date: 5/02/2005

Sample No.: 002

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270				CMG	5/10/05
Naphthalene	EPA 8270	0.56 J	ug/L	CMG	5/10/05
2-Methylnaphthalene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Acenaphthylene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Acenaphthene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Fluorene	EPA 8270	3.7	ug/L	CMG	5/10/05
Phenanthrene	EPA 8270	2.9	ug/L	CMG	5/10/05
Anthracene	EPA 8270	2.6	ug/L	CMG	5/10/05
Fluoranthene	EPA 8270	0.52 J	ug/L	CMG	5/10/05
Pyrene	EPA 8270	0.45 J	ug/L	CMG	5/10/05
Benzo [a] Anthracene	EPA 8270	0.33 J	ug/L	CMG	5/10/05
Chrysene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [b] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [k] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [a] Pyrene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Dibenzo [a,h] Anthracene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [g,h,i] Perylene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	63.8	% R	CMG	5/10/05
***2-Fluorobiphenyl	EPA 8270	60.8	% R	CMG	5/10/05
***P-Terphenyl-D14	EPA 8270	66.4	% R	CMG	5/10/05
Extraction	EPA 3510C	1.0	DF	CMG	5/10/05
MCP METALS				AJY	5/05/05
Silver	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Arsenic	EPA 6010B	<0.010	mg/L	AJY	5/05/05
Barium	EPA 6010B	0.595	mg/L	AJY	5/05/05
Beryllium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Cadmium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Chromium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Mercury	EPA 7470A	<0.00050	mg/L	NH	5/09/05
Nickel	EPA 6010B	<0.010	mg/L	AJY	5/05/05
Lead	EPA 6010B	0.014	mg/L	AJY	5/05/05
Antimony	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Selenium	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Thallium	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Vanadium	EPA 6010B	0.0062	mg/L	AJY	5/05/05
Zinc	EPA 6010B	0.069	mg/L	AJY	5/05/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0505-00039

Sample ID: B-205  
 Sample Date: 5/02/2005

Sample No.: 003

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					
Naphthalene	EPA 8270	0.56 J	ug/L	CMG	5/10/05
2-Methylnaphthalene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Acenaphthylene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Acenaphthene	EPA 8270	6.1	ug/L	CMG	5/10/05
Fluorene	EPA 8270	5.1	ug/L	CMG	5/10/05
Phenanthrene	EPA 8270	4.1	ug/L	CMG	5/10/05
Anthracene	EPA 8270	0.79 J	ug/L	CMG	5/10/05
Fluoranthene	EPA 8270	0.72 J	ug/L	CMG	5/10/05
Pyrene	EPA 8270	0.47 J	ug/L	CMG	5/10/05
Benzo [a] Anthracene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Chrysene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [b] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [k] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [a] Pyrene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Dibenzo [a,h] Anthracene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [g,h,i] Perylene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	59.5	% R	CMG	5/10/05
***2-Fluorobiphenyl	EPA 8270	58.2	% R	CMG	5/10/05
***P-Terphenyl-D14	EPA 8270	60.0	% R	CMG	5/10/05
Extraction	EPA 3510C	1.0	DF	CMG	5/10/05
MCP METALS					
Silver	EPA 6010B	<0.0050	3	AJY	5/05/05
Arsenic	EPA 6010B	<0.010	mg/L	AJY	5/05/05
Barium	EPA 6010B	0.131	mg/L	AJY	5/05/05
Beryllium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Cadmium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Chromium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Mercury	EPA 7470A	<0.00050	mg/L	NH	5/09/05
Nickel	EPA 6010B	<0.010	mg/L	AJY	5/05/05
Lead	EPA 6010B	0.014	mg/L	AJY	5/05/05
Antimony	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Selenium	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Thallium	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Vanadium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Zinc	EPA 6010B	0.023	mg/L	AJY	5/05/05

GZA GeoEnvironmental, Inc.

## ANALYTICAL REPORT

Project Name: Laboratory Testing Services  
 Project No.: 08.0018237.00

Work Order No.: 0505-00039

Sample ID: B-207  
 Sample Date: 5/02/2005

Sample No.: 004

Test Performed	Method	Results	Units	Tech	Analysis Date
POLYNUCLEAR AROMATIC HYDROCARBONS - EPA 8270					CMG 5/10/05
Naphthalene	EPA 8270	3.4	ug/L	CMG	5/10/05
2-Methylnaphthalene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Acenaphthylene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Acenaphthene	EPA 8270	2.1	ug/L	CMG	5/10/05
Fluorene	EPA 8270	1.5 J	ug/L	CMG	5/10/05
Phenanthrene	EPA 8270	1.1 J	ug/L	CMG	5/10/05
Anthracene	EPA 8270	0.57 J	ug/L	CMG	5/10/05
Fluoranthene	EPA 8270	0.46 J	ug/L	CMG	5/10/05
Pyrene	EPA 8270	0.42 J	ug/L	CMG	5/10/05
Benzo [a] Anthracene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Chrysene	EPA 8270	0.18 J	ug/L	CMG	5/10/05
Benzo [b] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [k] Fluoranthene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [a] Pyrene	EPA 8270	0.15 J	ug/L	CMG	5/10/05
Indeno [1,2,3-cd] Pyrene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Dibenzo [a,h] Anthracene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Benzo [g,h,i] Perylene	EPA 8270	<2.0	ug/L	CMG	5/10/05
Surrogates:	EPA 8270				
***Nitrobenzene-D5	EPA 8270	83.2	% R	CMG	5/10/05
***2-Fluorobiphenyl	EPA 8270	71.3	% R	CMG	5/10/05
***P-Terphenyl-D14	EPA 8270	94.4	% R	CMG	5/10/05
Extraction	EPA 3510C	1.0	DF	CMG	5/10/05
MCP METALS					AJY 5/05/05
Silver	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Arsenic	EPA 6010B	<0.010	mg/L	AJY	5/05/05
Barium	EPA 6010B	0.109	mg/L	AJY	5/05/05
Beryllium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Cadmium	EPA 6010B	<0.0050	mg/L	AJY	5/05/05
Chromium	EPA 6010B	0.0136	mg/L	AJY	5/05/05
Mercury	EPA 7470A	<0.00050	mg/L	NH	5/09/05
Nickel	EPA 6010B	0.016	mg/L	AJY	5/05/05
Lead	EPA 6010B	0.048	mg/L	AJY	5/05/05
Antimony	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Selenium	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Thallium	EPA 6010B	<0.025	mg/L	AJY	5/05/05
Vanadium	EPA 6010B	0.0217	mg/L	AJY	5/05/05
Zinc	EPA 6010B	0.055	mg/L	AJY	5/05/05

**Water Analyses**

**0506-00019 - 06/-2/05**

**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA and ME: MA092 NH: 2028  
CT: PH0579 RI: LAO00236  
NELAC - NYS DOH: 11063

**ANALYTICAL DATA REPORT**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054  
617-747-7350  
Mr. Jeffery Hardin

Project No.: 08.0018237.00  
Work Order No.: 0506-00019  
Date Received: 6/02/05  
Date Reported: 6/08/05

**SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
6/02/2005	Aqueous	0506-00019 001	TP-1

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 6/08/05  
Work Order No.: 0506-00019

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### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 06/02/05 via    GZA courier,    EC,    FEDEX, or    x hand delivered.  
The temperature of the    temperature blank/   x cooler air, was 0.1 degrees C. The samples were received intact for all requested analyses.

The samples were appropriately preserved in accordance with the method they reference.

#### 2. MADEP EPH

\* The reporting limits for sample "TP-1" are increased due to the low sample volume submitted for analysis.

Attach QC EPH 06/03/05 - Aqueous

Were any significant modifications made to the VPH or EPH methods?      ( ) Yes    ( x ) No

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 6/08/05  
Work Order No.: 0506-00019

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Data Authorized By: \_\_\_\_\_



% R = % Recovery  
DF = Dilution Factor  
DFS = Dilution Factor Solids  
DO = Diluted Out

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

Please note that the laboratory signed copy of the chain of custody record is an integral part of the data report.

The laboratory report shall not be reproduced except in full without the written consent of the laboratory.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per each method and are reported at the end of the analytical report if assigned on the chain of custody.

GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748

ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffery Hardin

Project Name: Laboratory Testing Services  
Project No.: 08.0018237.00

Date Received: 6/02/05  
Date Reported: 6/08/05  
Work Order No.: 0506-00019

Sample ID: TP-1  
Sample Date: 6/02/2005

Sample No.: 001

Test Performed	Method	Results	Units	Tech	Analysis Date
<b>EXTRACTABLE PETROLEUM HYDROCARBONS (and PAHs)</b>					
Unadjusted C11-C22 Aromatic Fraction	MADEP	100000	ug/L	RJD	6/06/05
C9-C18 Aliphatic Fraction	MADEP	240000	ug/L	RJD	6/06/05
C19-C36 Aliphatic Fraction	MADEP	32000	ug/L	RJD	6/06/05
C11-C22 Aromatics (excludes target PAHs)	MADEP	100000	ug/L	RJD	6/06/05
Surrogates:	MADEP				
***1-Chlorooctadecane (aliphatic): 40-130 %R	MADEP	53.1	%R	RJD	6/06/05
***p-Terphenyl (aromatic): 50-123 %R	MADEP	63.4	%R	RJD	6/06/05
***2-Bromonaphthalene (aromatic)	MADEP	108	%R	RJD	6/06/05
<b>TARGETED PAH ANALYTES</b>					
Naphthalene (Diesel PAH)	MADEP	310	ug/L	RJD	6/06/05
2-Methylnaphthalene (Diesel PAH)	MADEP	300	ug/L	RJD	6/06/05
Acenaphthylene (Diesel PAH)	MADEP	660	ug/L	RJD	6/06/05
Acenaphthene (Diesel PAH)	MADEP	460	ug/L	RJD	6/06/05
Fluorene	MADEP	670	ug/L	RJD	6/06/05
Phenanthrene (Diesel PAH)	MADEP	740	ug/L	RJD	6/06/05
Anthracene	MADEP	410	ug/L	RJD	6/06/05
Fluoranthene	MADEP	< 50	ug/L	RJD	6/06/05
Pyrene	MADEP	< 50	ug/L	RJD	6/06/05
Benzo [a] Anthracene	MADEP	< 50	ug/L	RJD	6/06/05
Chrysene	MADEP	< 50	ug/L	RJD	6/06/05
Benzo [b] Fluoranthene	MADEP	< 50	ug/L	RJD	6/06/05
Benzo [k] Fluoranthene	MADEP	< 50	ug/L	RJD	6/06/05
Benzo [a] Pyrene	MADEP	< 50	ug/L	RJD	6/06/05
Indeno [1,2,3-cd] Pyrene	MADEP	< 50	ug/L	RJD	6/06/05
Dibenzo [a,h] Anthracene	MADEP	< 50	ug/L	RJD	6/06/05
Benzo [g,h,i] Perylene	MADEP	< 50	ug/L	RJD	6/06/05
Extraction	EPA 3510C	10	DF	JEJ	6/03/05



GZA GEOENVIRONMENTAL, INC.  
 ENVIRONMENTAL CHEMISTRY LABORATORY  
 106 SOUTH STREET, HOPKINTON, MA 01748 (781) 278-4710  
 MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP EPH  
 EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

EXT. DATE: 6/3/05

Aqueous

Page 1 of 2

METHOD BLANK	AQUEOUS	SOLID
	ug/L-PPB	mg/kg - PPM
<b>UNWEIGHTED CONC.</b>		
C9-C18 Aliphatics	<100	<1.0
C19-C36 Aliphatics	<100	<1.0
C10-C22 Aromatics	<100	<2.0
C10-C22 Aromatics (adjusted)	<100	<1.0
<b>TARGET COMPOUNDS</b>		
Naphthalene	<5.0	<0.30
2-Methylnaphthalene	<5.0	<0.30
Acenaphthylene	<5.0	<0.30
Acenaphthene	<5.0	<0.30
Fluorene	<5.0	<0.30
Phenanthrene	<5.0	<0.30
Anthracene	<5.0	<0.30
Fluoranthene	<5.0	<0.30
Pyrene	<5.0	<0.30
Benzo(a)anthracene	<5.0	<0.30
Chrysene	<5.0	<0.30
Benzo(b)fluoranthene	<5.0	<0.30
Benzo(k)fluoranthene	<5.0	<0.30
Benzo(a)pyrene	<5.0	<0.30
Indeno(1,2,3-c,d)pyrene	<5.0	<0.30
Dibenzo(a,h)anthracene	<5.0	<0.30
Benzo(g,h,i)perylene	<5.0	<0.30
<b>Surrogate:</b>	<b>Recovery (%)</b>	<b>Acceptance Limits</b>
***1-Chlorooctadecane (Aliphatic)	63.3	40-140
***p-Terphenyl (Aromatic)	62.0	40-140
<b>Fractionation Surrogate:</b>		
***2-Bromonaphthalene	125	40-140

GZA GEOENVIRONMENTAL, INC.  
ENVIRONMENTAL CHEMISTRY LABORATORY  
106 SOUTH STREET, HOPKINTON, MA 01748 (781) 278-4710  
MASSACHUSETTS LABORATORY I.D. NO. MA092

**MADEP EPH**  
**EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

EXT. DATE: 6/3/05

Aqueous

LABORATORY CONTROL SAMPLE DUPLICATE LCS	LCS Recovery (%)	LCS Dup Recovery (%)	Limits
<b>Aliphatics:</b>			
Nonane	30.7	34.9	30-140
Decane	41.5	43.9	40-140
Dodecane	40.2	47.0	40-140
Tetradecane	47.6	56.4	40-140
Hexadecane	56.6	65.3	40-140
Octadecane	59.7	66.8	40-140
Nonadecane	55.8	66.4	40-140
Eicosane	61.8	70.7	40-140
Docosane	59.5	68.4	40-140
Tetracosane	59.7	67.4	40-140
Hexacosane	59.0	64.8	40-140
Octacosane	54.0	62.6	40-140
Triacontane	56.2	66.4	40-140
Hexatriacontane	58.5	71.0	
<b>Aromatics:</b>			
Naphthalene	41.8	42.0	40-140
2-Methylnaphthalene	41.3	45.0	40-140
Acenaphthylene	48.2	54.2	40-140
Acenaphthene	52.2	58.9	40-140
Fluorene	52.5	58.0	40-140
Phenanthrene	52.3	60.1	40-140
Anthracene	56.7	66.0	40-140
Fluoranthene	57.1	62.6	40-140
Pyrene	58.0	62.4	40-140
Benzo(a)anthracene	49.2	57.2	40-140
Chrysene	56.0	64.8	40-140
Benzo(b)fluoranthene	47.7	55.5	40-140
Benzo(k)fluoranthene	56.2	63.7	40-140
Benzo(a)pyrene	51.0	59.0	40-140
Indeno(1,2,3-c,d)pyrene	46.8	51.7	40-140
Dibenzo(a,h)anthracene	67.0	77.7	40-140
Benzo(g,h,i)perylene	53.2	59.9	40-140
<b>Surrogate:</b>			
***1-Chlorooctadecane (Aliphatic)	53.7	62.6	40-130
***p-Terphenyl (Aromatic)	57.4	66.6	40-130
<b>Fractionation Surrogate:</b>			
***2-Bromonaphthalene	127	122	40-140

# CHAIN-OF-CUSTODY RECORD

W.O. # 0506-00019  
(for lab use only)

Sample I.D.	Date/Time Sampled (Very Important)	Matrix A=Air S=Soil GW=Ground W. SW=Surface W. WW=Waste W. DW=Drinking W. Other (specify)	WW ONLY										ANALYSIS REQUIRED										Total # of Cont.	Note #			
			<input type="checkbox"/> pH <input type="checkbox"/> Cond	<input type="checkbox"/> GC Screen (VOA)	<input type="checkbox"/> 524.2 <input type="checkbox"/> 502.2	624	<input type="checkbox"/> 601 <input type="checkbox"/> 602	625	Formaldehyde	8260	8021	8021 - "8010" List	8021 "8020" List	8270 <input type="checkbox"/> Full <input type="checkbox"/> PAH <input type="checkbox"/> BBN	8082-PCBs Only	8081 - Pest Only	TPH-GC (Mod 8100)	TPH-GC w/FING	EPH (MA DEP)	VPH (MA DEP)	TCLP (Spec. Below)	Filtration (✓ if requested)			Metals <input type="checkbox"/> PPM-13 <input type="checkbox"/> R-8	Metals (List Below)	
1-1	1-2-05 8:30 A	S																								2	
2-1	" 8:45 A	S																								2	
4-1	" 9:30 A	S																								1	#2
4-2	" 9:30 A	S																								1	
5-1	" 9:45 A	S																								1	
5-2	" 9:45 A	S																								1	
TR-1	" 10:30 A	GL																								3	#1

PRESERVATIVE (CI - HCl, M=MeOH, N - HNO<sub>3</sub>, S - H<sub>2</sub>SO<sub>4</sub>, Na - NaOH, O - Other)\*

CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, O-Other)\*

RELINQUISHED BY: AK DATE/TIME: 6-2-05 RECEIVED BY: AK DATE/TIME: 6/2/05 1400

RELINQUISHED BY: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_ RECEIVED BY: \_\_\_\_\_

PROJECT MANAGER: Jeffrey Haddad EXT. \_\_\_\_\_

DATA REPORT ☒ PDF (Adobe) ☐ ASCII ☐ EXCEL Specify State \_\_\_\_\_

**GZA GEOENVIRONMENTAL, INC.**  
ENGINEERS AND SCIENTISTS

106 South Street  
Hopkinton, MA 01748  
(508) 435-9244  
FAX (508) 435-9912



GZAP003

NOTES: Preservatives, special reporting limits, known contamination, additional testing parameters, etc.:

MCE METALS

#1 limited volume

#2 hi metals expected

TURNAROUND TIME: Standard Rush \_\_\_\_\_ Days, Approved by: \_\_\_\_\_ LAB USE: \_\_\_\_\_ TEMP. OF COOLER 0.1 °C

GZA FILE NO: 08.00 18237.00 46-6/2 P.O. NO. 6/2/05

PROJECT Secord Street, Everett, MA

LOCATION Everett, MA

COLLECTOR(S) AK SHEET 1 OF 1



**GZA GeoEnvironmental, Inc.**  
**106 South Street**  
**Hopkinton, MA 01748**  
**(781) 278-4700**

Laboratory Identification Numbers:  
MA and ME: **MA092** NH: **2028**  
CT: **PH0579** RI: **LAO00236**  
NELAC - NYS DOH: **11063**

## **ANALYTICAL REPORT**

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project No.: **08.0018237.00**  
Work Order No.: **0804-00106**  
Date Received: **04/16/2008**  
Date Reported: **04/25/2008**

### **SAMPLE INFORMATION**

Date Sampled	Matrix	Laboratory ID	Sample ID
04/15/2008	Aqueous	0804-00106 001	B - 301 ow
04/15/2008	Aqueous	0804-00106 002	B - 302 ow
04/15/2008	Aqueous	0804-00106 003	B - 303 ow
04/15/2008	Aqueous	0804-00106 004	B - 205 ow



GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748  
(781) 278-4700

Page 2 of 12

## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

---

### PROJECT NARRATIVE:

#### 1. Sample Receipt

The samples were received on 04/16/08 via ☒ GZA courier, ☐ EC, ☐ FEDEX, or ☐ hand delivered.  
The samples were received intact for all requested analyses.

The following questions are answered upon sample receipt to determine compliance with MADEP Defined "Presumptive Certainty":

Were the samples received between 2-6 degrees C (Temperature = 3.1 degrees C)? (x) yes ( ) no  
\* The temperature requirement for most analyses is above freezing to 6 degrees C

Were the samples received with method specific preservatives within holding time? (x) yes ( ) no  
\* The chain of custody indicates that the samples, when required, were chemically preserved in accordance with the method they reference.

Were all constituents for the MCP Method(s) selected assigned on the COC? ( ) yes (x) no  
\* Full MCP14 Metals ( ) yes (x) no ( ) not assigned  
\* Full EPA 8270 SVOCs ( ) yes ( ) no (x) not assigned  
\* Full EPA 8260 or 8021 VOCs ( ) yes ( ) no (x) not assigned

#### 2. EPA Method 6010B - Metals

Attach QC 6010B 04/17/08 - Aqueous

#### 3. MADEP EXTRACTABLE PETROLEUM HYDROCARBONS (EPH)

Attach QC EPH 04/23/08 - Aqueous

Were any significant modifications made to the VPH or EPH methods? ( ) Yes (x) No

#### 4. MADEP VOLATILE PETROLEUM HYDROCARBONS (VPH)

Attach QC VPH 04/17/08 - Aqueous

Were any significant modifications made to the VPH or EPH methods? ( ) Yes (x) No



GZA GeoEnvironmental, Inc.  
106 South Street  
Hopkinton, MA 01748  
(781) 278-4700  
**ANALYTICAL REPORT**

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Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**  
Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

**MADEP MCP ANALYTICAL METHOD REPORT CERTIFICATION FORM:**

*An affirmative response to the following three questions is required for "Presumptive Certainty" status.*

Were all samples received by the laboratory in a condition consistent with that described on the Chain-of-Custody documentation for the data set? Yes ☒ No\* ☐

Were all QA/QC performance standards for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines? Yes ☒ No\* ☐

Does the analytical data included in this report meet all the requirements for "Presumptive Certainty", as described in Section 2.0 of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"? Yes ☒ No\* ☐

*A Response to the following two questions is required for "Presumptive Certainty" status.*

Were all QC performance standards and recommendations for the specified methods achieved? Yes ☒ No\* ☐

Were results for all analyte-list compounds/elements for the specified method(s) reported? Yes ☐ No\* ☒

*\* All Negative responses must be addressed in an attached Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: 

Date: 4/25/08

Printed Name: **Andrew Yaroshefski**

Position: **Laboratory Supervisor**



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## ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
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Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

---

### LABORATORY STATEMENTS:

NELAC certification, as indicated by the NELAC ID Number, is per analyte. For a complete list of NELAC validated analytes, please contact the laboratory.

#### Abbreviations:

% R = % Recovery  
DF = Dilution Factor  
CF = Calculation Factor  
DO = Diluted Out

#### Method Key:

Method 8260: The current version of the method is 8260B.  
Method 8021: The current version of the method is 8021B.  
Method 8270: The current version of the method is 8270C.  
Method 6010: The current version of the method is 6010B.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per method and are reported at the end of the analytical report if assigned on the Chain of Custody.



ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

Sample ID: **B - 301 ow**

Sample No.: **001**

Sample Date: **04/15/2008**

Test Performed	Method	Results	Units	Tech	Analysis Date
VPH	MADEP			KAC	04/17/2008
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	<25	ug/L	KAC	04/17/2008
C9-C12 Aliphatics	MADEP	<25	ug/L	KAC	04/17/2008
C9-C10 Aromatics	MADEP	<25	ug/L	KAC	04/17/2008
(excludes targeted analytes					
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	115	% R	KAC	04/17/2008
***2,5-Dibromotoluene (FID)	MADEP	109	% R	KAC	04/17/2008
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	<5.0	ug/L	KAC	04/17/2008
Benzene	MADEP	<1.0	ug/L	KAC	04/17/2008
Toluene	MADEP	<1.0	ug/L	KAC	04/17/2008
Ethylbenzene	MADEP	<1.0	ug/L	KAC	04/17/2008
m&p-Xylene	MADEP	<1.0	ug/L	KAC	04/17/2008
o-Xylene	MADEP	<1.0	ug/L	KAC	04/17/2008
Naphthalene	MADEP	<2.0	ug/L	KAC	04/17/2008
Preparation	EPA 5030B	1.0	DF	KAC	04/17/2008
EPH	MADEP			RJD	04/24/2008
Unadjusted C11-C22 Aromatic	MADEP	<100	ug/L	RJD	04/24/2008
C9-C18 Aliphatic Fraction	MADEP	<100	ug/L	RJD	04/23/2008
C19-C36 Aliphatic Fraction	MADEP	<100	ug/L	RJD	04/23/2008
C11-C22 Aromatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
Surrogates:	MADEP				
***1-Chloroctadecane	MADEP	52.9	%R	RJD	04/23/2008
***p-Terphenyl (aromatic)	MADEP	66.6	%R	RJD	04/24/2008
***2-Bromonaphthalene	MADEP	71.1	%R	RJD	04/24/2008
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
2-Methylnaphthalene	MADEP	<5.0	ug/L	RJD	04/24/2008
Acenaphthylene	MADEP	<5.0	ug/L	RJD	04/24/2008
Acenaphthene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
Fluorene	MADEP	<5.0	ug/L	RJD	04/24/2008
Phenanthrene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008





ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
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Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

Sample ID: **B - 301 ow**

Sample No.: **001**

Sample Date: **04/15/2008**

Test Performed	Method	Results	Units	Tech	Analysis Date
Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [a] Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008
Chrysene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [b] Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [k] Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [a] Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Indeno [1,2,3-cd] Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Dibenzo [a,h] Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [g,h,i] Perylene	MADEP	<5.0	ug/L	RJD	04/24/2008
Extraction	EPA 3510C	1.0	DF	TN	04/23/2008
DISSOLVED METALS					
Cadmium	EPA 6010B	<0.0050	mg/L	LLZ	04/18/2008
Chromium	EPA 6010B	<0.0050	mg/L	LLZ	04/18/2008
Copper	EPA 6010B	<0.015	mg/L	LLZ	04/18/2008
Lead	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Nickel	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Zinc	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Antimony	EPA 6010B	<0.025	mg/L	LLZ	04/18/2008
Arsenic	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008



ANALYTICAL REPORT

Underground Engineering, LLC  
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Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

Sample ID: **B - 302 ow**

Sample No.: **002**

Sample Date: **04/15/2008**

Test Performed	Method	Results	Units	Tech	Analysis Date
VPH	MADEP			KAC	04/17/2008
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	<25	ug/L	KAC	04/17/2008
C9-C12 Aliphatics	MADEP	<25	ug/L	KAC	04/17/2008
C9-C10 Aromatics	MADEP	<25	ug/L	KAC	04/17/2008
(excludes targeted analytes					
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	99.1	% R	KAC	04/17/2008
***2,5-Dibromotoluene (FID)	MADEP	95.3	% R	KAC	04/17/2008
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	<5.0	ug/L	KAC	04/17/2008
Benzene	MADEP	<1.0	ug/L	KAC	04/17/2008
Toluene	MADEP	<1.0	ug/L	KAC	04/17/2008
Ethylbenzene	MADEP	<1.0	ug/L	KAC	04/17/2008
m&p-Xylene	MADEP	<1.0	ug/L	KAC	04/17/2008
o-Xylene	MADEP	<1.0	ug/L	KAC	04/17/2008
Naphthalene	MADEP	<2.0	ug/L	KAC	04/17/2008
Preparation	EPA 5030B	1.0	DF	KAC	04/17/2008
EPH	MADEP			RJD	04/24/2008
Unadjusted C11-C22 Aromatic	MADEP	<100	ug/L	RJD	04/24/2008
C9-C18 Aliphatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
C19-C36 Aliphatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
C11-C22 Aromatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
Surrogates:	MADEP				
***1-Chlorooctadecane	MADEP	49.9	%R	RJD	04/24/2008
***p-Terphenyl (aromatic)	MADEP	63.0	%R	RJD	04/24/2008
***2-Bromonaphthalene	MADEP	78.3	%R	RJD	04/24/2008
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
2-Methylnaphthalene	MADEP	<5.0	ug/L	RJD	04/24/2008
Acenaphthylene	MADEP	<5.0	ug/L	RJD	04/24/2008
Acenaphthene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
Fluorene	MADEP	<5.0	ug/L	RJD	04/24/2008
Phenanthrene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008



ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
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Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

Sample ID: **B - 302 ow**

Sample No.: **002**

Sample Date: **04/15/2008**

Test Performed	Method	Results	Units	Tech	Analysis Date
Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [a] Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008
Chrysene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [b] Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [k] Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [a] Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Indeno [1,2,3-cd] Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Dibenzo [a,h] Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [g,h,i] Perylene	MADEP	<5.0	ug/L	RJD	04/24/2008
Extraction	EPA 3510C	1.0	DF	TN	04/23/2008
DISSOLVED METALS					
Cadmium	EPA 6010B	<0.0050	mg/L	LLZ	04/18/2008
Chromium	EPA 6010B	<0.0050	mg/L	LLZ	04/18/2008
Copper	EPA 6010B	<0.015	mg/L	LLZ	04/18/2008
Lead	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Nickel	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Zinc	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Antimony	EPA 6010B	<0.025	mg/L	LLZ	04/18/2008
Arsenic	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008



ANALYTICAL REPORT

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Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

Sample ID: **B - 303 ow**

Sample No.: **003**

Sample Date: **04/15/2008**

Test Performed	Method	Results	Units	Tech	Analysis Date
VPH	MADEP			KAC	04/17/2008
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	<25	ug/L	KAC	04/17/2008
C9-C12 Aliphatics	MADEP	<25	ug/L	KAC	04/17/2008
C9-C10 Aromatics	MADEP	<25	ug/L	KAC	04/17/2008
(excludes targeted analytes					
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	124	% R	KAC	04/17/2008
***2,5-Dibromotoluene (FID)	MADEP	118	% R	KAC	04/17/2008
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	<5.0	ug/L	KAC	04/17/2008
Benzene	MADEP	<1.0	ug/L	KAC	04/17/2008
Toluene	MADEP	<1.0	ug/L	KAC	04/17/2008
Ethylbenzene	MADEP	<1.0	ug/L	KAC	04/17/2008
m&p-Xylene	MADEP	<1.0	ug/L	KAC	04/17/2008
o-Xylene	MADEP	<1.0	ug/L	KAC	04/17/2008
Naphthalene	MADEP	<2.0	ug/L	KAC	04/17/2008
Preparation	EPA 5030B	1.0	DF	KAC	04/17/2008
EPH	MADEP			RJD	04/24/2008
Unadjusted C11-C22 Aromatic	MADEP	<100	ug/L	RJD	04/24/2008
C9-C18 Aliphatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
C19-C36 Aliphatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
C11-C22 Aromatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
Surrogates:	MADEP				
***1-Chlorooctadecane	MADEP	62.6	%R	RJD	04/24/2008
***p-Terphenyl (aromatic)	MADEP	74.2	%R	RJD	04/24/2008
***2-Bromonaphthalene	MADEP	74.8	%R	RJD	04/24/2008
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
2-Methylnaphthalene	MADEP	<5.0	ug/L	RJD	04/24/2008
Acenaphthylene	MADEP	<5.0	ug/L	RJD	04/24/2008
Acenaphthene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
Fluorene	MADEP	<5.0	ug/L	RJD	04/24/2008
Phenanthrene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008



ANALYTICAL REPORT

Underground Engineering, LLC  
312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

Sample ID: **B - 303 ow**

Sample No.: **003**

Sample Date: **04/15/2008**

Test Performed	Method	Results	Units	Tech	Analysis Date
Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [a] Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008
Chrysene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [b] Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [k] Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [a] Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Indeno [1,2,3-cd] Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Dibenzo [a,h] Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [g,h,i] Perylene	MADEP	<5.0	ug/L	RJD	04/24/2008
Extraction	EPA 3510C	1.0	DF	TN	04/23/2008
DISSOLVED METALS					
Cadmium	EPA 6010B	<0.0050	mg/L	LLZ	04/18/2008
Chromium	EPA 6010B	<0.0050	mg/L	LLZ	04/18/2008
Copper	EPA 6010B	<0.015	mg/L	LLZ	04/18/2008
Lead	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Nickel	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Zinc	EPA 6010B	0.025	mg/L	LLZ	04/18/2008
Antimony	EPA 6010B	<0.025	mg/L	LLZ	04/18/2008
Arsenic	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008



ANALYTICAL REPORT

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Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

Sample ID: **B - 205 ow**

Sample No.: **004**

Sample Date: **04/15/2008**

Test Performed	Method	Results	Units	Tech	Analysis Date
VPH	MADEP			KAC	04/17/2008
Unweighted Concentrations:					
C5-C8 Aliphatics	MADEP	<25	ug/L	KAC	04/17/2008
C9-C12 Aliphatics	MADEP	<25	ug/L	KAC	04/17/2008
C9-C10 Aromatics	MADEP	<25	ug/L	KAC	04/17/2008
(excludes targeted analytes					
Surrogate:					
***2,5-Dibromotoluene (PID)	MADEP	115	% R	KAC	04/17/2008
***2,5-Dibromotoluene (FID)	MADEP	113	% R	KAC	04/17/2008
TARGETED VPH ANALYTES					
Methyl-Tert-Butyl-Ether	MADEP	8.6	ug/L	KAC	04/17/2008
Benzene	MADEP	<1.0	ug/L	KAC	04/17/2008
Toluene	MADEP	<1.0	ug/L	KAC	04/17/2008
Ethylbenzene	MADEP	<1.0	ug/L	KAC	04/17/2008
m&p-Xylene	MADEP	<1.0	ug/L	KAC	04/17/2008
o-Xylene	MADEP	<1.0	ug/L	KAC	04/17/2008
Naphthalene	MADEP	<2.0	ug/L	KAC	04/17/2008
Preparation	EPA 5030B	1.0	DF	KAC	04/17/2008
EPH	MADEP			RJD	04/24/2008
Unadjusted C11-C22 Aromatic	MADEP	<100	ug/L	RJD	04/24/2008
C9-C18 Aliphatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
C19-C36 Aliphatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
C11-C22 Aromatic Fraction	MADEP	<100	ug/L	RJD	04/24/2008
Surrogates:	MADEP				
***1-Chloroctadecane	MADEP	52.1	%R	RJD	04/24/2008
***p-Terphenyl (aromatic)	MADEP	78.3	%R	RJD	04/24/2008
***2-Bromonaphthalene	MADEP	78.0	%R	RJD	04/24/2008
TARGETED PAH ANALYTES					
Naphthalene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
2-Methylnaphthalene	MADEP	<5.0	ug/L	RJD	04/24/2008
Acenaphthylene	MADEP	<5.0	ug/L	RJD	04/24/2008
Acenaphthene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
Fluorene	MADEP	<5.0	ug/L	RJD	04/24/2008
Phenanthrene (Diesel PAH)	MADEP	<5.0	ug/L	RJD	04/24/2008
Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008



ANALYTICAL REPORT

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312 Orchard Street  
Millis, MA 02054

Mr. Jeffrey Hardin

Project Name.: **Second Ave**  
Project No.: **08.0018237.00**

Date Received: **04/16/2008**  
Date Reported: **04/25/2008**  
Work Order No.: **0804-00106**

Sample ID: **B - 205 ow**

Sample No.: **004**

Sample Date: **04/15/2008**

Test Performed	Method	Results	Units	Tech	Analysis Date
Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [a] Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008
Chrysene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [b] Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [k] Fluoranthene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [a] Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Indeno [1,2,3-cd] Pyrene	MADEP	<5.0	ug/L	RJD	04/24/2008
Dibenzo [a,h] Anthracene	MADEP	<5.0	ug/L	RJD	04/24/2008
Benzo [g,h,i] Perylene	MADEP	<5.0	ug/L	RJD	04/24/2008
Extraction	EPA 3510C	1.0	DF	TN	04/23/2008
DISSOLVED METALS					
Cadmium	EPA 6010B	<0.0050	mg/L	LLZ	04/18/2008
Chromium	EPA 6010B	<0.0050	mg/L	LLZ	04/18/2008
Copper	EPA 6010B	<0.015	mg/L	LLZ	04/18/2008
Lead	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Nickel	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Zinc	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008
Antimony	EPA 6010B	<0.025	mg/L	LLZ	04/18/2008
Arsenic	EPA 6010B	<0.010	mg/L	LLZ	04/18/2008

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**EPA METHOD 6010B ANALYSIS**  
**Metals by ICP**

**QUALITY CONTROL - AQUEOUS**

**DATE PREPARED: 4/17/2008**

QC Sample	Method Blank	Lab Control Sample
Units	mg/L	% Recovery
Acceptance Limits	Results	80-120
<b>Analyte</b>		
Silver (Ag)	<0.0050	87.5
Aluminum (Al)	NA	NA
Arsenic (As)	<0.010	101
Boron (B)	NA	NA
Barium (Ba)	NA	NA
Beryllium (Be)	<0.0040	103
Calcium (Ca)	NA	NA
Cadmium (Cd)	<0.0050	98.4
Cobalt (Co)	NA	NA
Chromium (Cr)	<0.0050	100
Copper (Cu)	<0.015	102
Iron (Fe)	<0.025	103
Magnesium (Mg)	NA	NA
Manganese (Mn)	<0.0050	100
Molybdenum (Mo)	NA	NA
Nickel (Ni)	<0.010	101
Lead (Pb)	<0.010	98.8
Antimony (Sb)	<0.025	100
Selenium (Se)	<0.025	98.7
Strontium (Sr)	NA	NA
Titanium (Ti)	NA	NA
Thallium (Tl)	<0.025	96.6
Vanadium (V)	NA	NA
Zinc (Zn)	<0.010	101
Zirconium (Zr)	NA	NA

Matrix Spike / Duplicate Spike performed as per method and  
reported if assigned on Chain of Custody.



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**MADEP EPH  
 EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

**EXT. DATE:** 4/23/08

Aqueous

Page 1 of 2

<b>METHOD BLANK</b>	<b>AQUEOUS</b> ug/L-PPB	<b>SOLID</b> mg/kg - PPM
<b>UNWEIGHTED CONC.</b>		
C9-C18 Aliphatics	<100	<5.0
C19-C36 Aliphatics	<100	<5.0
C10-C22 Aromatics	<100	<5.0
C10-C22 Aromatics (adjusted)	<100	<5.0
<b>TARGET COMPOUNDS</b>		
Naphthalene	<5.0	<0.30
2-Methylnaphthalene	<5.0	<0.30
Acenaphthylene	<5.0	<0.30
Acenaphthene	<5.0	<0.30
Fluorene	<5.0	<0.30
Phenanthrene	<5.0	<0.30
Anthracene	<5.0	<0.30
Fluoranthene	<5.0	<0.30
Pyrene	<5.0	<0.30
Benzo(a)anthracene	<5.0	<0.30
Chrysene	<5.0	<0.30
Benzo(b)fluoranthene	<5.0	<0.30
Benzo(k)fluoranthene	<5.0	<0.30
Benzo(a)pyrene	<5.0	<0.30
Indeno(1,2,3-c,d)pyrene	<5.0	<0.30
Dibenzo(a,h)anthracene	<5.0	<0.30
Benzo(g,h,i)perylene	<5.0	<0.30
<b>Surrogate:</b>	<b>Recovery (%)</b>	<b>Acceptance Limits</b>
***1-Chlorooctadecane (Aliphatic)	58.3	40-140
***p-Terphenyl (Aromatic)	63.5	40-140
<b>Fractionation Surrogate:</b>		
***2-Bromonaphthalene	62.0	40-140

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**MADEP EPH**  
**EXTRACTABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

**EXT. DATE:** 4/23/08

Aqueous

LABORATORY CONTROL SAMPLE / DUPLICATE LCS	LCS Recovery (%)	LCS Dup Recovery (%)	Limits	RPD	Limits
<b>Carbon Ranges:</b>					
C9-C18 Aliphatic Fraction	52.3	49.9	40-140	4.70	< 25
C19-C36 Aliphatic Fraction	67.2	66.0	40-140	1.80	< 25
C10-C22 Aromatic Fraction	83.6	69.9	40-140	17.9	< 25
<b>Aromatics:</b>					
Naphthalene	79.4	63.8	40-140	21.8	< 25
2-Methylnaphthalene	79.8	63.6	40-140	22.6	< 25
Acenaphthylene	81.4	65.2	40-140	22.1	< 25
Acenaphthene	86.0	66.9	40-140	25.0	< 25
Fluorene	84.2	68.2	40-140	21.0	< 25
Phenanthrene	82.7	68.9	40-140	18.2	< 25
Anthracene	79.4	66.6	40-140	17.5	< 25
Fluoranthene	85.4	70.9	40-140	18.6	< 25
Pyrene	88.6	73.9	40-140	18.1	< 25
Benzo(a)anthracene	89.2	74.6	40-140	17.8	< 25
Chrysene	89.8	75.5	40-140	17.3	< 25
Benzo(b)fluoranthene	91.2	76.4	40-140	17.7	< 25
Benzo(k)fluoranthene	91.0	76.1	40-140	17.8	< 25
Benzo(a)pyrene	89.0	78.6	40-140	12.4	< 25
Indeno(1,2,3-c,d)pyrene	77.5	62.4	40-140	21.6	< 25
Dibenzo(a,h)anthracene	74.6	70.7	40-140	5.37	< 25
Benzo(g,h,i)perylene	71.4	65.4	40-140	8.77	< 25
<b>Surrogates:</b>					
***1-Chlorooctadecane (Aliphatic)	56.8	52.8	40-130		
***p-Terphenyl (Aromatic)	85.2	74.6	40-130		
<b>Fractionation Surrogate:</b>					
***2-Bromonaphthalene	97.1	83.7	40-140		
FRACTIONATION CHECKS	STANDARD (pass/fail)	COLUMN LOT NO.	LCS % in Aliphatic	LCSD % in Aliphatic	Acceptance Limit
Cartridge check	pass	22216-1-#			
Naphthalene			1.4	1.7	< 5
2-Methylnaphthalene			0.3	0.0	< 5

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**MADEP VOLATILE PETROLEUM HYDROCARBONS (VPH) / ME DEP 4.2.17 - GRO / EPA Method 8015B GRO  
PURGEABLES IN AQUEOUS AND/OR SOLID MATRIX**

**QUALITY CONTROL**

**DATE:**        **04/17/08**        **Aqueous**

METHOD BLANK	AQUEOUS	SOLID	
	ug/L-PPB	mg/kg - PPM	
HYDROCARBON FRACTIONS			
C5-C8 Aliphatics	<25	<1.0	
C9-C12 Aliphatics	<25	<1.0	
C9-C10 Aromatics	<25	<1.0	
TARGET COMPOUNDS			
Methyl tert butyl ether	<5.0	<0.25	
Benzene	<1.0	<0.10	
Toluene	<1.0	<0.10	
Ethylbenzene	<1.0	<0.10	
m,p-Xylenes	<1.0	<0.10	
o-Xylene	<1.0	<0.10	
Naphthalene	<2.0	<0.20	
Surrogate:	% Recovery	Limits - Aqueous	Limits - Solid
***2,5-Dibromotoluene (FID)	91.8	70-130	70-130
***2,5-Dibromotoluene (PID)	96.4	70-130	70-130

<b>LABORATORY CONTROL SAMPLE/ DUPLICATE LCS</b>	<b>% Recovery LCS</b>	<b>% Recovery LCS-Duplicate</b>	<b>RPD</b>	<b>Limits % Recovery</b>	<b>Limits RPD</b>
Methyl tert butyl ether	87.6	80.8	8.08	70-130	<25
Benzene	96.8	86.9	10.8	70-130	<25
Toluene	95.0	86.7	9.11	70-130	<25
Ethylbenzene	98.1	90.4	8.11	70-130	<25
m,p-Xylenes	103	95.5	7.73	70-130	<25
o-Xylene	95.0	88.8	6.70	70-130	<25
Naphthalene	88.7	95.6	7.51	70-130	<25
<b>Surrogate:</b>					
***2,5-Dibromotoluene (FID)	100	114			
***2,5-Dibromotoluene (PID)	105	117			

## CHAIN-OF-CUSTODY RECORD

W.O. # 0804-00106  
(for lab use only)

[illegible]

## APPENDIX D



# Method 2 Risk Characterization and Substantial Hazard Evaluation

413-421 Second  
Street  
Everett,  
Massachusetts

RTN 3-24465

December 4, 2007

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## 1. INTRODUCTION

On behalf of Underground Engineering (UE), Woodard & Curran conducted a Method 2 Risk Characterization (Method 2) and Substantial Hazard Evaluation (SHE) for the Disposal Site (the "Site") located at 413-421 Second Street, Everett, Massachusetts (DEP RTN 3-24465), in accordance with 310 CMR 40.0980, 310 CMR 40.0956 and Massachusetts Department of Environmental Protection (MassDEP) risk assessment guidance (MassDEP, 1995), in order to support a Phase II Comprehensive Site Assessment (CSA), to which this report is appended.

A Method 2 Risk Characterization is warranted, as MCP Method 1 Standards are not available for each of the Chemicals of Potential Concern (COPCs) at the Site. The Method 2 Risk Characterization compares the exposure point concentrations (EPCs) of each COPC to MCP Method 2 standards to determine whether a condition of No Significant Risk has been achieved at the Site. This method considers *both current and future* Site activities and uses, and evaluates the risk of harm to human health, public welfare and the environment. Additionally, a separate evaluation for safety is conducted for the Site. The results of the Method 2 indicate that a condition of No Significant Risk of harm to human health, public welfare and the environment does not exist at the Site.

In addition to the Method 2, a SHE was conducted for the Site. The intent of a SHE is to evaluate potential *current* exposures to human and environmental receptors, given the current land uses of the Site and the surrounding area. Components of this SHE included an exposure assessment for human receptors. Additionally, an Ecological Substantial Hazard Evaluation was conducted to evaluate potential environmental risks posed by current site conditions. The results of this SHE indicate that a condition of No Substantial Hazard exists for human health and the environment.



## 2. SITE DESCRIPTION AND RELEASE HISTORY

A detailed description of the Site history is presented in the Phase II CSA Report prepared by Underground Engineering, to which this report is appended. This section provides only a brief summary of the Disposal Site (the "Site") with regard to the potential for human and ecological receptors.

The Site is located on an approximately one acre parcel of industrial-zoned land on the north side of Second Street in Everett, Massachusetts (refer to Figure 1 of the Phase II report). There are no buildings on the Site, which is currently vacant. A 12-inch layer of asphalt covers the entire Site. The property is surrounded by a chain-link fence that is kept locked. Surrounding properties are primarily industrial or commercial in nature and are used for a variety of facilities, including truck storage, heavy equipment storage, metal recycling and a contractor's storage yard. Most of the residential section of Everett lies at least one-half mile north of the Site. There is one school located 0.4 miles west northwest of the Site.

The Site has a long history of industrial use. Prior to development, the subject property consisted of tidal marshland associated with the Island End/Mystic Rivers. Soil boring logs reflect historical filling of the marshlands; a layer of fill material overlies a thick layer of peat. The ACME Smelting Company began operations at the site in 1926-1927 as a lead smelting plant and occupied the Site more than 55 years until 1982. Most recently, the Site has been used by the M. Kaplan & Co. scrap metal recycling company, which ceased operations in 1998. The main facility, as well as all outbuildings and scrap metal debris, were razed and removed from the property in 2007.

There are no documented records of releases from either of these facilities. Poor housekeeping practices, facility emissions, incidental spills, and leaking underground storage tanks (USTs) have likely resulted in the releases of oil and/or hazardous materials (OHM) documented in soil and groundwater at the Site.

As a result of the former smelting operations and, potentially, fill material used to develop the property, heavy metals (especial lead, nickel and zinc), polycyclic aromatic hydrocarbons (PAHs) and extractable petroleum hydrocarbons (EPH) are present in Site soil. Relatively low concentrations of volatile petroleum hydrocarbons (VPH) and trichloroethylene (TCE) have also been detected in soil samples collected at the Site. No clear lateral or vertical pattern of impact is evident, although concentrations of metals and PAHs appear highest in shallower soils on the west and north sides of the former warehouse. Soil analytical results are summarized in Table 1. (Analytical results for individual soil samples are presented in the Phase II report.) This summary reflects all soil data collected at the Site to-date and represents surface and subsurface soils collected at depths up to approximately 15 feet below ground surface (bgs).<sup>1</sup>

Ground water is present at the Site approximately three to five feet bgs, and flows in a southerly direction. Analytical results from groundwater samples collected at the Site are summarized in Table 2 and indicate detectable concentrations of PAHs and heavy metals. (Analytical results for individual groundwater samples are presented in the Phase II report.) This summary table represents all monitoring well data collected at the Site between 2004 and

---

<sup>1</sup> Two samples (101-5 and 101-6, July 2004) were collected at depths greater than 15' bgs. Data from these two samples are not included in the risk characterization, as it is assumed that soils greater than 15' bgs are isolated and exposures to soils at this depth are unlikely to occur. Data from three additional samples (GRAB-1 through GRAB-3, collected in June 2004, were not included in the risk characterization, as these samples are representative of indoor dust, rather than soil.

2005<sup>2</sup>. To the north of the former warehouse, relatively low concentrations of VPH fractions have been detected in groundwater.

All constituents detected in soil and groundwater were retained as Chemicals of Potential Concern (COPCs) for each medium.

---

<sup>2</sup> Data from wells UGE-1 through UGE-3, June 2004, were not included in the risk characterization, since groundwater samples from these wells displayed elevated turbidity. Turbidity was reduced in subsequent samples collected in July 2004 from these wells, and these data were therefore assumed representative of groundwater conditions at these wellheads.

### **3. METHOD 2 RISK CHARACTERIZATION**

As indicated, this report includes a Method 2 risk characterization, which includes a comparison of soil and groundwater concentrations to both Method 1 cleanup standards promulgated in the MCP (310 CMR 40.0974 and 40.0975) and Method 2 standards derived by Woodard & Curran, in the absence of MCP Method 1 standards. A Method 2 risk characterization is applicable to the Site as OHM is limited to soil and groundwater and no bioaccumulative compounds are present in exposed surface soil; however, as MCP Method 1 standards were not available for all identified COPCs, Method 2 standards were derived, in accordance with the MCP. Comparison of the concentrations of COPCs to the Method 2 standards evaluates the risk of harm to human health, environment, and public welfare. As part of a Method 2 risk characterization, a separate, qualitative evaluation of the risk of harm to safety has also been included.

#### **3.1 EXPOSURE ASSESSMENT**

The objective of the Exposure Assessment is to estimate the type of potential exposure to Site-related COPCs present at or migrating from the Site. Exposure is described based on the populations potentially exposed to contaminated media via specific exposure pathways, as determined by current and future potential land use.

The Site is currently a paved and vacant lot in an industrial area of Everett. The property is surrounded by chain-link fencing and access is controlled through a locked gate. No buildings are present at the Site. Under current conditions, it is unlikely that any human receptors would be exposed to COPCs in soils.

As there are no deed restrictions on the subject property, Woodard & Curran assumes that all impacted soils may be brought to the surface and/or become exposed in the future. Under future scenarios, trespassers, facility workers, construction/utility workers or hypothetical future Site residents may be exposed to COPCs in soil. It is unlikely that facility workers, trespassers or future residents would be directly exposed to COPCs in groundwater because groundwater at the Site is not used for potable use, irrigation, or in any other manner at the Site. Furthermore, only low levels of volatile and semi-volatile constituents have been detected in groundwater, so vapor intrusion into buildings is not likely a complete transport mechanism/exposure pathway. As the groundwater table is shallow, however, construction or utility workers may potentially encounter COPCs in groundwater through direct contact during subsurface excavation.

#### **3.2 SOIL AND GROUNDWATER CLASSIFICATION**

Soil and groundwater were classified using MCP criteria (310 CMR 40.0930). The criteria are based on current and unrestricted potential future uses of the Site.

Under the MCP, groundwater may be classified as GW-1, GW-2 and/or GW-3. GW-1 criteria are protective of potential drinking water sources and do not apply. The Site is not located within a potentially productive aquifer, within an interim or delineated Zone II of a public water supply, or within 500 feet of a Class A Surface Water body. There are no private drinking water supplies within 500 feet of the Site. Thus, groundwater at the Site is not classified as GW-1.

GW-2 criteria are protective of potential volatilization to indoor air and apply when groundwater is located within 30 feet of an occupied building and the average depth to groundwater is 15 feet or less. Depth to groundwater at the Site varies from approximately 3 to 5 feet below ground surface. The Site, however, is currently vacant, and there are no buildings located on the Site. Therefore, groundwater at the Site is not classified as GW-2.

All groundwater at this Site meets GW-3 classification criteria, which are protective of discharge to surface water. The nearest surface water body to the Site is the Island End River, located approximately 2,500 feet south of the Site. Thus, under current and reasonably foreseeable conditions, groundwater at the Site is classified as GW-3.

Under the MCP, soil is classified as S-1, S-2 or S-3. Soil categories are based on potential receptors (i.e., adults and/or children), frequency of exposure, and intensity of exposure. Currently, the Site is vacant, surrounded by fencing and located within an industrial area of Everett. Furthermore, Site soils are located beneath a layer of asphalt pavement. Therefore, since there is minimal potential for exposure to OHM-impacted soils, soils at all depths are categorized as S-3 under current conditions.

There are no deed restrictions on the property that would restrict certain land uses and activities. Under future use scenarios, therefore, we have assumed that all soils 0-15' bgs may be accessible by all age groups on a high-frequency basis. Thus, all Site soils located at 0 to 15' bgs are classified as S-1. Under future scenarios, soils located at depths greater than 15 feet bgs remain classified as S-3.

In summary, groundwater at the Site is classified as GW-3 and soils are classified as S-3 under current use and S-1 under future use.

### 3.3 EXPOSURE POINT CONCENTRATIONS

For the purposes of this Method 2 risk characterization, the average concentration of each COC in soil was chosen as the exposure point concentration (EPC). To generate the average concentration of the EPC, half the detection limit was used for sample results reported as not detected. Use of the average concentration as the EPC is appropriate at the Site, as concentrations of COCs are heterogeneously distributed among soil samples, and no Hot Spots have been identified. (Additional data statistics, such as the 75<sup>th</sup> percentile and maximum, are discussed relative to the Method 2 standards in Section 3.5) Therefore, use of the average as EPC is relevant for potential receptors that are anticipated to have a widespread exposure to soils across the Site, rather than exposure to one discrete area.

### 3.4 DERIVATION OF METHOD 2 STANDARDS

Method 1 soil and groundwater standards were available for all COCs, except for copper. Method 2 S-1 soil and GW-3 groundwater standards were therefore developed for copper in accordance with 310 CMR 40.0983(4). This derivation is presented in Tables 3 through 5. Although Site soils are currently classified as S-3, we derived only S-1 standards, which are designed to be the more conservative standards between S-1 and S-3 soils.

The first step in deriving a GW-3 standard is to identify a target surface water concentration protective of aquatic receptors. Because a USEPA National Recommended Water Quality Criterion (NRWQC) was available for copper, this value (the chronic freshwater value) was used as the target surface water concentration. A dilution/attenuation factor (DAF) was then applied to the target surface water concentration, based on criteria presented in 310 CMR 40.0983(4), to derive a target groundwater concentration. This value was then compared to a ceiling value of 50,000 µg/L and the lowest value between the ceiling value and target groundwater value was then selected as the Method 2 GW-3 standard (also taking into consideration practical quantitation limits for the analytical method). Derivation of the GW-3 standard for copper is presented on Table 3.

Method 2 soil standards take into consideration direct contact exposures as well as leaching potential, background concentrations, and technical feasibility. The first step in deriving the Method 2 S-1/GW-3 soil standard for copper

included calculation of a leaching-based soil concentration, using the Method 2 GW-3 standard as the target groundwater concentration (as described in the preceding paragraph). This derivation is shown in Table 3.

A separate risk-based concentration was then calculated for copper. This concentration is designed to be protective of direct contact exposures by residential receptors. Since copper is not known to be carcinogenic, only a non-cancer-based direct contact concentration was calculated. Derivation of the direct contact soil standard for copper is presented on Table 4.

The direct contact and leaching-based concentrations were compared to a ceiling level of 1,000 mg/kg. The lowest value among these three concentrations was then compared to the MassDEP background level (MassDEP 2002) and practical quantitation limit; the highest concentration among these three values was then chosen as the Method 2 S-1/GW-3 soil standard. This derivation is presented on Table 5.

### 3.5 RISK CHARACTERIZATION

The Risk Characterization compares the soil and groundwater EPCs at the Site to MCP Method 1 and 2 standards. Standards applicable to the Site include GW-3 groundwater standards and S-1 and S-3 soil standards for GW-3 aquifers.

Maximum detected concentrations of COPCs in groundwater were compared to Method 2 GW-3 standards, as shown in Table 2. Maximum detected concentrations of cadmium, copper, lead and zinc exceeded the Method 2 standards. All detected groundwater concentrations of other COPCs were below the applicable Method 2 GW-3 standards.

For soil, we compared average concentrations to only S-1/GW-3 standards, as these standards are the most conservative among the three soil categories. As shown in Table 1, mean concentrations of benzo(a)pyrene, chrysene, cadmium, chromium, copper, lead, nickel and zinc exceed the Method 2 standards. Mean concentrations of other COPCs are below the applicable standard; however, 75<sup>th</sup> percentile concentrations of antimony and arsenic also exceed their applicable standards.

Soil and groundwater at the Site are currently inaccessible and therefore, since there are no complete exposure pathways, there is no significant risk of harm to human health under current conditions. Because soil and groundwater EPCs exceed applicable MCP Method 2 standards, however, a level of No Significant Risk of harm to human health, welfare and the environment has not been demonstrated for reasonably foreseeable future Site conditions.

### 3.6 RISK OF HARM TO SAFETY

Potential risk of harm to safety was characterized for the Site in accordance with 1995 MassDEP risk assessment guidance. The purpose of evaluating the risk of harm to safety, as written in the guidance, is to identify conditions which have resulted or may result in a release of OHM currently or in the foreseeable future that will pose a threat of physical harm or bodily injury to people. The presence of COCs detected in the soils and groundwater at the Site does not constitute a significant risk to safety. For example, the COCs do not pose a threat of fire or explosion. There are no materials in Site soils or groundwater that exhibit the characteristics of corrosivity, reactivity, flammability, or are considered infectious or radioactive. Based on the current understanding, the conditions at the Site related to these compounds do not currently and will not in the foreseeable future pose a threat of physical harm or bodily injury to people.

## 4. HUMAN HEALTH SUBSTANTIAL HAZARD EVALUATION

The human health SHE evaluates the potentially exposed human populations and quantifies health risks for all complete and relevant exposure pathways, through a site-specific "Method 3" risk characterization approach, specified in the MCP at 310 CMR 40.0993. This risk assessment was conducted in accordance with MassDEP and USEPA risk assessment guidance.

Complete and potentially complete exposure pathways were qualitatively evaluated as part of the human health risk characterization completed for the Site. A complete exposure pathway, which links COPCs in an environmental medium to a human receptor, consists of the following elements:

- a source and mechanism of chemical release;
- a retention or transport medium;
- a point of potential human contact (exposure point); and
- an exposure route (e.g., dermal contact, ingestion, or inhalation).

Human exposure may be direct, i.e., the receptor contacts the COPCs in the affected medium such as air, water or soil, or may be indirect, involving exposure to chemicals from the Site through the food chain; for example, one may ingest COPCs via consumption of fish or vegetables.

Chemicals of potential concern identified in soil include PAHs, heavy metals, petroleum hydrocarbons and TCE. In groundwater, heavy metals and petroleum hydrocarbons have been detected. As discussed, the Site is currently vacant and soils are covered with asphalt pavement. Access to the Site is limited by chain-link fencing and a locked gate. Groundwater at the Site is not used for either potable or nonpotable uses. Therefore, under current conditions, there are no complete exposure pathways by which human receptors may be exposed to COPCs in either soil or groundwater.

Since COPCs in soil and groundwater are located beneath pavement and there are no receptors routinely present at the Site, there is no mechanism of release and no point of exposure; therefore, no exposure to these soils via direct contact, incidental ingestion or inhalation of (soil-borne) particulates will occur. Since risk of harm to human health can only result through exposure to COPCs and the current land uses and existing pavement eliminate the potential for exposure, a condition of No Substantial Hazard to human health has been achieved at the Site, due to pathway elimination.

## 5. ECOLOGICAL SUBSTANTIAL HAZARD EVALUATION

In accordance with 310 CMR 40.0956(2), an evaluation of potential ecological risks must be completed as part of the SHE. Site conditions were evaluated with respect to the following criteria set forth in 310 CMR 40.0956(2) to demonstrate that a condition of No Substantial Hazard exists for ecological receptors at the Site:

- Based on reported Site observations, there is no visual evidence of stressed biota attributable to site-related releases;
- The visible presence of oil, tar, or other non-aqueous phase hazardous material in soil within three feet of the ground surface over an area equal or greater than two acres has not been noted at the Site;
- Continuing discharge of contaminated groundwater to surface water where levels of the contaminants attributable to the release already exceed Massachusetts Surface Water Standards or pose a significant risk to ecological receptors is not occurring;
- Migration of contaminants to additional environmental media or resource areas where resulting exposures would have the potential to pose significant risk of harm in the future as not been observed; and,
- Ecological risk or harm such that recovery would be substantially more difficult or would require more time if conditions were to remain unremediated for even a short period of time is unlikely.

Based on reported Site observations, there is no evidence that Site conditions indicate the presence of a substantial hazard to the environment. The Site is located in a densely populated industrial-zoned area, and there is no undeveloped portion of the Site, nor are there any contiguous undeveloped parcels of land. Based on Site observations and a review of a MassGIS 21E Priority Resource Map for the Site and surrounding area, the nearest potential environmental receptor identified in the area is the Island End River, located approximately 2,500 feet to the south. Conditions at the Site, however, are not anticipated to impact this resource area, as the release is confined to a relatively small area, is generally located in subsurface soils and as impacted groundwater is unlikely to migrate to this waterway.

## **6. CONCLUSIONS OF THE METHOD 2 RISK CHARACTERIZATION AND SUBSTANTIAL HAZARD EVALUATION**

The results of the Method 2 RC indicate that concentrations of several COPCs, primarily metals in soil and groundwater, exceed MCP Method 1 and 2 standards for S-1 soils. Therefore, a condition of No Significant Risk of Harm to Human Health, Public Welfare and the Environment does not exist at the Site under current or future conditions.

Because the Site is currently vacant, no structures are present at the Site and COPC-impacted soils are located beneath asphalt pavement, there are no currently complete exposure pathways for either human or ecological receptors. Therefore, a condition of No Substantial Hazard to Human Health or the Environment exists at the Disposal Site located at 413-421 Second Street, Everett, Massachusetts.



## 7. REFERENCES

Massachusetts Geographic Information System (MassGIS). 2007. 21E Priority Resource Map, accessed at <http://www.mass.gov/mgis/mapping.htm> in June 2007.

Massachusetts Department of Environmental Protection (MADEP). 2002. Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil. Bureau of Waste Site Cleanup, Boston, MA. May 23, 2002.

Massachusetts Department of Environmental Protection (MADEP). 1995. Guidance for Disposal Site Risk Characterization - In Support of the Massachusetts Contingency Plan, Interim Final Policy. WSC/ORS 95-141. July, 1995. Bureau of Waste Site Cleanup. Boston, Massachusetts.

Massachusetts Department of Environmental Protection (MADEP). 1994. Background Documentation for the Development of MCP Numerical Standards. Bureau of Waste Site Cleanup and Office of Research and Standards, Boston, MA. April, 1994.